

DES veto delays postgrad course

by Patricia Santinelli

The Department of Education and Science is delaying the transfer and validation of West Sussex Institute of Higher Education's postgraduate education course in what appears to be the first exercise of its powers of approval over teaching training courses.

The first intimation that these powers of veto or approval which are vested in the Secretary of State for Education, but up to now seldom used, would be put into effect, emerged last month.

Sir Keith Joseph, announcing the launch of the White Paper *Teaching Quality*, said that courses which did not conform to certain newly laid down criteria would not receive approval.

Now the department has apparently used this to delay transfer of the Postgraduate Certificate of Education, which has been running successfully at the Institute's Bishop Otter College since 1969, from validation by the University of Sussex to the Council of National Academic Awards, on the grounds that it is not satisfied with changes made in the course.

It has also asked the CNA to not grant final approval to the course which had been initially approved, provided some changes were made, following a visit to the college.

Both the council and the college are now convinced that this represents the first move by the department into course approval on the lines of the White Paper.

The DES claims that this is merely a routine exercise - although approval of transfer is usually a formality - and that has nothing to do with the White Paper, but that the course needs to have certain elements strengthened.

It points out that it had never granted approval for transfer, not having received a reply to its queries about the course, and that the college should not have gone ahead and sought CNA validation.

The college on the other hand says that it had answered the department's questions at length. When it received no reply it assumed that transfer had been approved, and that the usual stereotypical letter was on its way.

It has now written to the department expanding on its original answer. This explains that the inclusion of a secondary teaching strength in history and a mathematics in education course, which all PGCE students have to take, is not a backdoor method of training teachers in these areas.

In both cases this was meant to give students greater breadth, and the mathematics in education course was also intended to teach prospective teachers methods by which they could improve the numeracy of their pupils.

Design policy row brewing

Government departments appear to be heading for a clash over the Government's new policy of promoting design education in Britain.

The Department of Industry has been pumping money into a series of curriculum development projects in design as well as promoting industrial awareness of design, while the Department of Education and Science is poised to reduce art and design courses as part of its higher education cuts policy.

The DoI has so far given £15,000 to the Council for National Academic Awards to investigate ways of introducing design management into more polytechnic and college courses, and another £15,000 to the London Business School's design management unit to expand its range of design teaching.

The department has also given £90,000 over three years via the Design Council for a series of curriculum development projects. A committee under Mr Brian Overy, secretary of the CNA, has approved 12 projects from some 65 applications. Details will be released shortly.

The two departments have each given £10,000 to fund a new paper for secondary schools called *Design*. The DoI is also putting money via the Design Council directly into universities to promote specialized design research.

The Government has repeatedly stressed its strong belief that good design is fundamental to the business of successful manufacture. This week a further £7m has been allocated to its successful "Design for Profit" initiative within industry.

Meanwhile a National Advisory Body working group, under Dr Patrick Nuttgens, director of Leeds Polytechnic, is currently reviewing art and design courses, often expensive to run, in polytechnics and colleges. Some could well close.

SSRC gets its man

The Social Science Research Council has won its tug-of-war with the Prime Minister's Office over the services of Sir Frank Cooper. The former head of the Ministry of Defence will serve on the council for three years until July 1986, replacing another former MoD head, Sir James Dunnett. The confirmation has been delayed several months because Mrs Thatcher wanted Sir Frank to do "more important work" for her.

'Support YTS' says Youthaid

In a radical about turn, Youthaid, the most outspoken critic of the Youth Training Scheme, argues today that its opponents should not boycott the scheme but work within it.

They can thus prevent it from becoming a form of cheap labour, the organization says. "If they negotiate for proper pay for trainees, it will be possible to thwart those who want to attack youth wages and destroy the remaining jobs for school-leavers."

Youthaid welcomes the TUC suggestion that unions should negotiate with employers to "top-up" the state allowance, because the latter will reflect the extent to which trainees are productive.

Ms Clare Short, the director of Youthaid, said: "Trade unionists hold the key to the success of this new strategy. YTS will not succeed unless large employers become involved and with them come trade unions. They are in a position to impose conditions on the scheme to ensure that the young unemployed are not exploited and used to threaten other people's jobs."

New blood bids

continued from front page

were modest in our proposal. But we are disappointed about information technology. We are very interested in this area and wrote to the Science and Engineering Research Council in February about a scheme for studentships and we have not had a response."

Mr John Akker, deputy general secretary of the Association of University Teachers, said the number of posts was derisory and he would be raising the issue of distribution with MPs and others whereby some technological and small universities had done badly.

The AUT has asked the Equal Opportunities Commission whether it would support a test case against the ruling that appointments should go to people 35 or under. Mr Akker said he had received hundreds of letters from people complaining that the age limit would deter women from returning to the profession.

One common complaint however has been that the University Grants Committee ignored the priority given to the bids by the universities. Some vice chancellors are privately astonished that some universities got the posts they did. They would have urged even greater selectivity.



The 28th Sunday Times National Student Drama Festival has been held over the last week at Bretton Hall College, Wakefield. Besides 16 new student productions, there have been workshops held by professional writers, actors and directors. Here Clive Stubbs, from the University of East Anglia's Minotaur Theatre Company, is on the set of their production of Trevor Griffiths' *Comedians* with Jimmy Jewel and Susannah York.

Unions in clash on contracts campaign

by David Jobbins

Rival trade unions this week stepped up their campaigns in support of contract research staff in the universities.

The Association of University Teachers, concerned about the effects of the cuts and the recession on the security of research staff, launched a survey of conditions at Manchester University in preparation for a national conference later this month.

The Association of Technical, Managerial and Supervisory Staffs drew up detailed proposals for the immediate introduction of a permanent career structure for researchers.

The AUT has consistently opposed the idea of a permanent structure, arguing that academics should mix research and teaching. It has developed a short-term strategy seeking permanent academic posts for staff who have been employed on short-term contracts for six years or more, but has never been able to agree on the longer term.

On April 28 a London conference will examine the problems and will set in train the process of replacing the union's present ad hoc advisory committee on researchers by a permanent representative national committee. Under the proposals, to be presented to the union's national council in May, researchers will for the first time have within the AUT democratic procedures for identifying issues and determining how they should be tackled.

Mr Brian Salter, senior research officer at Surrey University and chairman of the AUT national advisory group on research staff, said universities were being forced to use research as cheap labour.

"Effectively, Government is seeking to buy tame professionals using short-term contracts as its primary means of economic control," he says in an article in the latest issue of the *Higher Education Review*.

Figures in the article show the proportion of contract researchers within academic ranks has increased from 18 per cent in 1975/76 to 21 per cent by 1979/80.

Many of the problems are well known, but solutions are likely to be elusive. A survey at Bristol University found that 62 per cent of staff responding had one year or less of their contract to run. Although more than half were on their first contract, 34 per cent were on their second or third, and 9 per cent had had four or more. In some departments, 70 per cent of contract staff had some teaching involvement. The survey found that 60 per cent had been asked to sign away their right to redundancy pay.

The ASTMS has consistently argued for a permanent career structure. Its proposals for implementing it involve a radical change in the way funds are drawn from the research councils and other bodies. The union says that applications for support would include an identified element for salaries and overheads.

Prison teacher back at work

Prison education officer Anita Bromley, who was suspended for "gross misconduct" from Kingston Prison in Hampshire for almost a year, returned to work this week with the threat of disciplinary action apparently lifted.

Ms Bromley, 37, was suspended after refusing to comply with a Hampshire County Council decision to split her full-time job as English and languages teacher at the prison, and to arrange for her to work 40 per cent of her time at Highbury College of Technology.

According to the council, the Home Office, which funds all prison education posts, decided to cut the

funding for Kingston, at one time the prison service's educational showpiece, so that Ms Bromley could no longer be paid full time. But she and her union, the National Association of Teachers in Further and Higher Education, argued that her contract was specifically for working in the prison.

After discussions with the Home Office, the authority agreed that she could work 80 per cent of her hours in the prison and 20 per cent at the college, with the arrangements to be reviewed after a year and a full-time post given her if there was sufficient work. A Hampshire spokesman said no disciplinary action was now proposed.

Outer space project wins European vote

The European Space Agency has set its scientific sights firmly on the stars with the choice of an infra-red observatory for its latest space mission.

The choice of the ISO satellite from a shortlist of five candidates is a disappointment to scientists more interested in the planets than galaxies, especially as the £130m cost of ISO, which should be launched in the early 1990s, means the following scientific mission will not go ahead until at least 1995.

The new programme is seen as a successor to the infra-red astronomical satellite launched this year by Britain, Holland and the United States.

and now sending back a wealth of new data. But some planetary scientists regard the ESA decision as a manifestation of bias towards astronomy rather than studies of the solar system. The agency's next scientific launches, before ISO, are now an X-ray satellite, due this year, Giotto, to study Halley's comet in 1985, and Hipparcos, for measurement of star positions the following year.

Solar system geophysicists originally had high hopes for the Kepler Mars mission on ESA's shortlist, but Professor Keith Runcorn of Newcastle University explained that "a powerful lobby for planetary science in Europe is only now getting on its feet."

NAB wants to keep back research cash

by John O'Leary

A proportion of the Government's allocation to polytechnics and colleges of higher education will be kept back to fund research if a consultative document from the National Advisory Body is accepted.

The paper, which has been approved by both the board and the committee of the NAB, proposes the establishment of a research fund for 1984/85, the year for which a major restructuring of the public sector is already planned. A decision on the policy will be taken in the summer to enable the NAB to make allowances in the planning exercise.

It is suggested that the research fund should take between 1 and 5 per cent of the advanced further education pool. The paper states that there are several reasons for preferring the lower figure, which would have represented 60m this year. Chief among them is the likely damage to unit costs, since the only other avenue of compensation - reducing student access - could be difficult to defend.

"In addition the larger the sum to be distributed the greater would be the danger that those authorities not allocated such funds would feel it unnecessary to use their general pool income for any research purposes," says the paper. "A smaller fund in the first instance would indicate that it is not meant to provide the exclusive source of research funding from the pool."

It estimates that 60m could purchase "close to 400 person years of 400,000 person hours per year" allowing existing staff to be released for research work or additional contract staff to be engaged. Institutions receiving research funds would be expected to report on their use and, in return, would be guaranteed a set period of support.

The paper reassures colleges and polytechnics that the minimum level of general funding, which will be agreed as part of the 1984/85 planning exercise, will not be breached as a result of the proposed policy. It suggests that all public sector institutions be eligible for research support but criteria be established which would ensure that "only institutions with a serious research function be considered."

Union rift with WEA on jobless scheme

by Karen Gold

A dispute is growing between trade union lecturers and branches of the Workers' Educational Association over proposals for an education and training scheme for the unemployed.

The scheme was negotiated between the WEA nationally and the Manpower Services Commission, under the new voluntary projects programme. But the full-time lecturers' rejection of its proposals has revealed a wider power struggle between branch managements and unionists over who runs the WEA.

The two bodies are likely to clash publicly within the next week, when the WEA publishes a statement of its grievances against the WEA branch of the Association of Technical, Managerial and Supervisory Staffs.

It will stress that the argument between the two sides is not simply about the WEA's participation in the VPP, which now looks increasingly unlikely following the lecturers' official rejection of it as undermining academic freedom and their pay and conditions. (MSC sponsored projects must be agreed by both management

and unions, since the MSC includes equal representation from both.) Instead, according to WEA general secretary Mr Robert Lochrie, the argument is now "about whether or not the ASTMS WEA group accepts the voluntary democratic decision-making process of the WEA, and about how they have conducted themselves throughout the long process of consultation."

The ASTMS nationally has agreed to meet WEA representatives within the next 10 days, but has already stressed that all the union sections are autonomous in decisions such as these. The issue is also likely to be aired at the WEA's biennial conference in Harrogate next month.

The WEA has also written to all its branches asking them not to participate in any other schemes under the VPP until this problem has been solved. Had the scheme been agreed, a considerable number of WEA districts - which can also make an autonomous decision on this - would be likely to apply to run courses in basic skills for the unemployed, perhaps to the extent of £500,000.

Election policy poses tough test for NUS leadership

by David Jobbins

Labour leaders of the National Union of Students face a tough test this weekend when their political opponents press home the advantage scored when a draft post-school education policy document failed to be endorsed by the union's conference.

The NUS executive will have to decide how to handle the conference decision to refer the policy document, essentially written by Mr Tommy Sheppard, vice president for education and a member of the National Organization of Labour Students' back to it for further consideration.

Mr Neil Stewart, NUS president and a member of NOLS, is anxious the union should not be left without a coherent education policy in the run-up to the general election whether in June or October.

Either date precludes the possibility of waiting until a new policy document can be drafted and presented to the union's December conference. But the newly-regenerated Left Alliance, which led the opposition at conference, is certain to press home its advantage and demand wide consultations within the union.

'Re-form genetics watchdog'

The Genetic Manipulation Advisory Group should be reconstituted as an advisory committee to the Health and Safety Commission, according to a consultative paper issued by the Department of Education and Science last week.

As expected, the paper says there is still a need for a body like GMAG, which oversees the safety of genetic experiments in which DNA is transferred between different organisms. But it also points out that most scientists now believe the hazards of such work are less than was thought when GMAG was set up in 1976. Since then, a new risk assessment

scheme has reduced GMAG's workload, and much of which remains concerns large-scale, industrial experiments.

The paper concludes that the transfer of GMAG's responsibilities to a new Advisory Committee on Genetic Manipulation is the best of four options discussed for the group's future. The others are for GMAG to continue unchanged; setting up two committees, one for the DES and one for the HSC; and a committee like the existing Advisory Committee on Dangerous Pathogens, which is responsible to both the department and the HSC.

Call for longer training in social work

Social workers should train for an extra probationary year after the basic qualifying period they were told at a meeting in Manchester this week.

The call came from Miss Mary Stiden, principal of the National Institute of Social Work, who saw the extra probationary year as an improvement to social work provision in the country.

She was echoing a recommendation made in the Barclay report on social work, published last year as a general review of the profession, as requested by government ministers.

But the proposal is regarded as highly controversial because it might lead to the use of students as cheap labour with no guarantee of full employment.

Miss Stiden said the extra year would provide opportunities to build new working links between employers and educational institutions, and allow a chance for specialist training skills to be introduced after the end of a basic qualifying training course.

She told the annual meeting of the British Association of Social Workers the profession was failing its respon-



A Jewish boy puts his hands up at the end of the Warsaw Ghetto uprising exactly 40 years ago. The picture comes from *The Track of Tyranny 1933-1943* a new exhibition that opens today at the Wiener Library, 4 Devonshire Street London W1, to mark the library's fiftieth anniversary. The library has also just bought an important new London collection of more than 1,000 books on Polish Jewry and the Holocaust for £10,000.

EEC backs special course for women

by Felicity Jones

A course to prepare female students to take a management studies diploma at Leeds Polytechnic has been given first priority for a £45,000 award from the European Economic Community social fund.

The idea for the preparatory course arose from the fact that few women applied for the polytechnic's diploma in management studies, which has been running for 12 years. Lecturer Sue Turnbull, who made the application, was prompted by the fact that women constitute 40 per cent of the workforce but only 8 per cent held top management jobs.

"Lack of confidence, a poor grasp of numeracy and inadequate communication skills are all factors which contribute to this state of affairs," she said.

"I believe that there are a fair number of very competent secretaries with the capacity to go further who need this sort of course to get them on their way."

It will involve a 15-month programme for unemployed women over 25 who have no formal management skills or training but wish to enter management. There will be individual part-time preparatory courses for 25 students with a practical summer placement with a local business after which 12 women will be given grants to cover fees, subsistence and creche costs to study for the one-year diploma.

There will be a screening process at the 21st week involving a numeracy test, a business aptitude test and an interview to decide which applicants will continue on to the diploma.

The EEC social fund is willing to finance courses which will train women to gain employment in areas where they are under-represented. Sue Turnbull said: "Women are increasingly needing management training as they become involved in running cooperatives and setting up small business."

A typical candidate for the course would be one woman who wrote to the business school inquiring about the diploma. She had no formal qualifications but had 20 years' experience establishing a building and joinery business with her husband and needed qualifications to compete in the job market since her marriage had broken down.

Cuts 'distort arts subjects'

Ministerial pressure to promote scientific work at the expense of the remainder of higher education could distort some subjects in the arts and social sciences, it was claimed at last weekend's annual conference of the British Association for American Studies.

Professor Dennis Welland, of Manchester University, said in his opening address to the conference at Edinburgh University he was worried by the new and contrary directions into which literary criticism and historiography were moving as disciplines.

"History is moving towards the statistical and the quantitative, criticism into too rarified an atmosphere of conceptualization and theory unconnectedly remote from a simple understanding of the text," he said. "When a tilt towards science is ministerially decreed for the universities and the non scientific is facili-

equated with the useless, there is a great temptation to seek to reinstate by adopting methods that can be presented as quasi-scientific."

He added: "We ought not totally to neglect or fail to make our students aware of works that had for earlier generations a significance greater than they seem to have for us... In focusing our attention on the great creative and imaginative artists we can too easily ignore the more factually minded artists of observation whose work is "in the highest degree documentary".

This plea for a greater tolerance of the "documentary novel" was linked to his own championing of Upton Sinclair, who he considers unjustly omitted from the Pantheon of American Letters. Many of Sinclair's novels such as *The Jungle* do indeed provide a strong link between labour and literature - the theme of the conference - if not "high" literature.

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News in brief

Unions call for legal basis

Government policies are counterproductive to adult education and training, which will continue to be undermined until it has a proper legal basis, according to a discussion paper published this week by two teaching unions.

The paper from the National Association of Teachers in Further and Higher Education and the Association for Adult and Continuing Education proposes a quality scheme for combined short-term employment and training for unemployed adults to replace the current £150m Community Programme; financial support for the unemployed to use the Open Tech; increased provision of general and job-related education for the unemployed, and a national adult and continuing education policy.

Fewer architects

There was a decrease in the number of students starting part one three-year architectural courses last year, according to a survey of the 37 schools of architecture carried out by the Royal Institute of British Architects. Numbers dropped from 1626 in 1982 to 1505 in 1983, although the polytechnics increased their intake. The proportion of women new entrants went up to 21 per cent.

Independent move

Dr Kenneth Miller has resigned from the University Grants Committee to concentrate on his duties as director-general of the Engineering Council. The two organizations will still discuss matters like four-year degree courses, but Dr Miller was concerned that they be seen to formulate their views independently.

New secretary

The new executive secretary of the Overseas Students Council for Overseas Students Affairs is to be Gail Taylor, the present head of student services at Chelsea College, London. She will take up the post in June, succeeding Mr Rupert Bristow, who is to become head of student services at South Bank Polytechnic.

New ABRC members

Two new appointments to the Advisory Board for the Research Councils are Professor Walter Bodmer, director of research for the Imperial Cancer Research Fund and Dr Tony James, head of Unilever's research division in bioscience. They will serve until 1985, and will join the "independent" members who make the first assessment of bids for funds from the five research councils in the Department of Education and Science's annual science budget.

Historical review

A series of regional conferences emphasizing the importance of history in general education will take place in the autumn, organized by the Historical Association, and the History at Universities Defence Group which operates under its aegis.

Minister clarifies jobless 21-hour rule

Confusion over the 21-hour study rule for the unemployed which has prevented hundreds of young people from attending colleges may end following a ministerial statement from the Department of Health and Social Security this week.

The statement, which clarifies the amount of study unemployed young people may do without their benefits being affected, was issued by Mr Tony Newton, joint parliamentary under secretary of state at the DHSS in reply to Mr Tom Torney, MP for Bradford South.

It is now clear that students are eligible for benefit provided they fulfil three conditions. They must not

Language 'biggest barrier for scientists'

by Jon Turney
Science Correspondent

English-speaking scientists are missing important results through neglect of foreign journals, according to a new study of researchers' reading habits.

Dr Andrew Large of the College of Librarianship of Wales, Aberystwyth, points out that while English is the leading scientific language it still accounts for less than half of all research journals. In a book published this month, he argues that "the foreign language barrier probably poses the biggest current obstacle to scientific communication".

Dr Large describes how library surveys and citation studies show that British and American scientists use very little foreign-language ma-

terial. And ignoring foreign journals can lead to duplication of expensive research projects and, at worst, to unnecessary deaths when treatments for medical emergencies go unnoticed outside their country of origin.

The book's findings on Japanese journals are especially significant, as Japanese research and development is advancing rapidly in several key fields, including computers and biotechnology. The number of journals publishing papers in Japanese is growing quickly, but a reading ability in the language is almost non-existent among English-speakers, according to Dr Large.

And Iain Gow, research director of Mitaka Ltd, publishers of abstracting journals covering Japanese research stressed that the country - already

recognized as a technological superpower - was well on the way to becoming a scientific superpower as well.

In spite of this, Mr Gow found that some academics still insisted that worthwhile Japanese work was all published in English, even when they had no knowledge of Japanese. Our scientists ought to be learning Japanese now, he said to keep up with developments in pharmaceuticals, electronics and materials science. But there was still a widespread feeling that Japanese researchers produced little original work.

Dr Large found a slightly brighter picture in the other three leading scientific languages - French, German and Russian - but unfortunately reading abilities in these languages were "in inverse relationship to their

scientific importance", with Russian the least common ability.

His own solution to the language barrier is improvement on machine translation, as he holds out little hope for improving scientists' linguistic skills or for the international auxiliary languages like Esperanto, still promoted by some enthusiasts. "Machine translation offers a future in which raw, unedited output of scientific texts can be produced very cheaply and placed within the reach of scientists," Large writes. Ironically, the most active researchers on machine translation are found in a country especially keen to profit from foreign research - Japan.

The Foreign Language Barrier, by J. A. Large published on April 25 by Andre Deutsch. £9.95 pb.

Brent staff sanctions anger college unions

by David Jobbins

Enforced withdrawal of 28 civilian tutors from the Hendon police cadet school is threatening to provoke a bitter dispute between Labour-controlled Brent council and the college lecturers' union.

Brent decided this week to withdraw the staff from the school as part of its campaign to secure the reinstatement of lecturer Mr John Fernandes, barred by the school principal, Commander John Wells, for leaking allegedly racist comments culled from cadets' essays to a television team.

Commander Wells has refused to reinstate Mr Fernandes, who has been criticized by his union, the National Association of Teachers in Further and Higher Education, for "unprofessional" behaviour in not drawing his complaints to the attention of union officials before going public.

Natfhe is not prepared to discuss the redeployment of the staff with Brent until the threat to withdraw the staff on April 25 is lifted.

Mr Peter Dawson, the union's general secretary, said: "We do not see withdrawal of such a large body of staff from their normal place of work as contributing to anything, let alone opposition to racism." Of the 28 staff 26 wanted to stay at the school.

Courtauld to move house

Negotiations between the University of London and the Department of the Environment on moving the Courtauld art collection to Somerset House have reached an advanced stage, the university announced this week.

Moving the institute and its galleries from Woburn Square to the Strand will mean that twice as many pictures as at present can go on public display.

The actual move will not take place until at least 1985 as legislation will be necessary to enable Somerset House to be used for non-Government purposes. The institute will also shortly be launching an appeal for £3m which it will need to adapt the building.

The art collections of the institute will be in the Fine Rooms, which were designed by William Chambers and built between 1776-78 for the Royal Academy, the Royal Society and the Society of Antiquaries.

King's College, London, is still negotiating with the Government for other parts of Somerset House.

The move of the Courtauld, which is a University of London senate institute will mean that the history of art is taught in the same building as the pictures are housed, and the Courtauld will be able to show 90 per cent of its collection. Now it only has the space for 40 per cent.

Professor Randolph Quirk, vice-chancellor of London University said: "For the first time these pictures will be in reach of the British public and will be able to see the Fine Rooms."

Many Natfhe leaders are privately angry at Brent's action when preservation of the status quo would open the opportunity for the neighbouring authority of Barnet to be included in discussions about the future of the school and its civilian staff.

Mr Dawson was more restrained: "I think it very sad Brent is taking this quite disgraceful industrial relations step in the misguided view that it is a weapon in the battle against racism."

But Mr Ron Anderson, chairman of Brent's further education subcommittee, said: "We are no longer prepared to continue to have anything to do with a course which does not take into account the anti-racist element of multi-cultural education which Mr Fernandes was teaching before he was excluded."

"Natfhe has been spectacularly unsuccessful in persuading the police to put this back into the curriculum. At the end of the day you have to stand up and be counted."

He said that all civilian staff at the school had been guaranteed suitable alternative employment within the borough's further education service.

Natfhe has accused the borough of breaching a national agreement that the status quo should prevail during negotiations to end a dispute. "The real status quo is to reinstate Mr Fernandes," Mr Anderson replies.

New fund to beat pirates

British publishers are to set up an anti-piracy fund worth £100,000 a year for three years to help recoup losses of £100m a year.

The fund will be used to pressure government to update laws governing copyright infringements, to publicise details about copyright "pirates" and perhaps to bring overseas test cases.

The fund is being supported by most of the major academic publishers including Macmillan, Collins, Blackwell Scientific, Heinemann, Educational, Longman's, Pitman's and Associate Book Publishers. If successful it could lead in future to cheaper books.

The main target will be the Far East, particularly Taiwan, generally agreed to be the worst offender, but also Singapore, Hongkong and Malaysia. With test cases pending in Singapore, it is interesting to note that "piracy" is relatively low key at present. Worldwide "piracy" is said to cost publishers £500m a year.

In Britain publishers say there is no real problem over the piracy of books, but they remain extremely concerned about the copyright laws dating from 1956 which they say have long been in need of reform.

Mr Nicolas Thompson, director at Pitman's, and chairman of the protection of piracy and protection of copyright committee of the Publishers Association, said publishers were now determined to fight worldwide piracy after some years of hesitation. Full details were to be announced at the annual general meeting of the PA this week.

Paul Flather reports on the British Sociological Association AGM at Cardiff

New BSA fund to aid jobless

Sociologists in Britain plan to create a special development fund to help unemployed academics and graduates in the discipline to continue their studies and research.

The British Sociological Association at its annual general meeting in Cardiff last week, approved in principle a plan to divert more of its funds to prevent the appearance of a "lost generation of sociologists" because of the current lack of academic jobs.

Dr Janet Finch, president of the 1,400-member association, and senior lecturer in social administration at Lancaster University, said a healthy financial surplus had allowed the association to review its services to members. Details will be announced next month.

Among ideas now being considered are awarding grants to unemployed sociologists for the typing or completion of work, awarding travel grants to attend conferences or study

groups, and providing advice on job seeking.

The BSA is also planning to write to all heads of sociology departments asking them to consider awarding honorary fellowships to unemployed sociologists of proven academic merit in their areas.

The association believes this will give sociologists - particularly PhD students awaiting their first appointment - the "academic space" to pursue their studies without becoming demoralized. Precedents, based on the model of associate fellowships given to foreign academics, have occurred at Manchester, Surrey, and Warwick universities.

Dr Robert Burgess, secretary of the BSA, said: "We really want to act as a pump-priming body. Given the few jobs on offer there is already a vast group of sociologists with these completed waiting to be involved in teaching and research."

Journal's success story

Sociology, the association's journal, is in future to be provided free to all members, reflecting the profitability and success of the journal to date.

It is currently edited by Professor Martin Albrow, professor of sociology at University College, Cardiff, with an editorial board drawn from a cross-section of the association membership.

It has also recently jumped from twelfth to sixth place in the unofficial world rankings of sociology journals in the English-speaking world.

The rankings are constructed by asking all journal editors to put a list of some 60 journals in order of merit.

Sociology, ranks below four American journals and the *British Journal of Sociology*, which is produced at the London School of Economics. Professor Albrow has been working

hard to make the writing as intelligible as possible by strict editing. "There is far too much sorting of ideas out in public," he said.

Shorter articles meant more published, and the average delay between submission and publication was down from about eighteen months to about nine months in the past few years. In 1982, 94 articles were submitted, 31 accepted, 60 rejected, and three withdrawn.

Sales to institutions were 1,267 and to individuals 555, compared to 1,163 and 849 in 1975. The decision to give members free copies will add on about 500 readers.

During the same year the journal received some 500 books for review, much less than previous years, which the editors put down to the economic crisis in publishing.

MSC outlines its 'adult' approach

by Karen Gold

The Manpower Services Commission plans to issue a coherent adult education and training strategy before the end of the year, according to the consultative document it published on the subject this week.

The document, *Towards an Adult Training Strategy*, implies an even greater involvement of the mainstream education system, a higher, further and adult level, than the MSC has already.

At a press conference on Monday Mr Geoffrey Holland, the MSC's director, confirmed that the exercise would encompass money presently spent by the education service on adults. He estimated the amount involved as between £600m and £700m.

The document emphasizes the importance of lifelong adult training to respond particularly to new technol-

ogy and new skills, and although it outlines no specific action it does suggest that locally based initiatives, mainly directed towards people already in employment, will form the way forward.

It poses questions about the purposes and aims an adult training strategy should have: its immediate, medium and long-term objectives, finding a balance between the need for a planned labour force and individual aspirations; and the possible agencies for developing such a strategy.

Funding for the strategy would come partly from a redistribution of the MSC's current spending on adult training, mostly on the Training Opportunities Scheme (TOPS) of £280m.

But the published document also includes a paragraph not even in the final draft, repeating the commis-

sion's view that new ways of funding training "must be devised, which recognize the public and private benefits of training and the need for substantial state involvement".

Controversial early ideas from the MSC about the "private" benefits justifying private funding - suggestions included a training voucher scheme and a local training tax on employers - have been dropped but are likely to reappear after the consultative period ends in June.

The purpose of the discussion paper is to raise the level of debate about adult training, according to MSC chairman Mr David Young. "At the moment adult training and retraining are poor relations" he said. "In the view of the Manpower Services Commission, adult training and retraining will be every bit as important in the 1980s as youth training."

He said each executive meeting now dealt with strategies to oppose cuts and defend the discipline. A regular bulletin called *Counterpoint* provides latest details.

At Aberystwyth University there is concern over plans to restructure sociology teaching; the honours course at Buckinghamshire College of Higher Education is set to close despite BSA protests; the school at Leicester Polytechnic faces cuts;

social sciences at Newcastle Polytechnic faces disproportionate cuts; at Wolverhampton Polytechnic sociology is now part of educational studies.

Dr Burgess also reported that the Argentine authorities had at least released Ernesto Villanueva, a sociologist and former rector of Buenos Aires University. The association has made regular protests on his behalf.

About 250 sociologists went to Cardiff to discuss topics dealing with the theme, the periphery of industrial society.

Abrams prize

A memorial essay prize in honour of Philip Abrams, former professor of sociology at Durham University, who died aged 48 in 1981, has been established by the BSA. It will be open to recent graduates with £100 awarded for the best 6,000-word essay on a topic on which the highly regarded Abrams worked. Contributions to the prize fund are invited by the BSA.



"Stubble", a drawing by Jane Boyd, artist-in-residence 1981-83 as fellow commoner in creative arts at Trinity College, Cambridge. An exhibition of her work begins today at the college and continues until April 30.

Top poly post is blacked

A new senior administrative post at one of England's biggest polytechnics has been blacked by the local government white-collar workers' union in a dispute over reorganization.

Talks are planned later this month between the National and Local Government Officers' Association and senior management at North East London Polytechnic.

But if the dispute is not resolved Nalgo members at the polytechnic will be balloted on a range of sanctions already passed by a general meeting which will bar cooperation with the reorganization plan drawn up by the director, Mr Gerry Fowler, in an effort to cut costs.

Nalgo members will also refuse to work on any jobs advertising material - internal or external - and to cooperate with anyone appointed from outside.

If it is not resolved the action will hit hardest in the new bursar's department, where Nalgo claims an outsider was appointed in breach of an agreement that posts should not be advertised externally until internal applicants had been considered.

The white-collar staff are also angry that plans for the reorganization - which could cost 100 posts, many by voluntary means - are being produced piecemeal. They want to be able to evaluate the entire plan before passing judgment on it.

Overall about one third of the white-collar jobs in the polytechnic's central administration will be lost - heavily concentrated in the departments which are being merged to create the new bursary which takes over estates management, maintenance, and the reprographic unit.

Nalgo has negotiated a no-compulsory-redundancy agreement which terminates next March.

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TT3

Overseas News

China banks on the world for technological aid

by Thomas Land

China's universities have opened their gates to the West for specialist assistance in the teaching of science and technology to back its agriculture-based development strategy. In the long term, China hopes to attain self-sufficiency in food production.

Within the next three years, some 250 scholars and engineers from Britain, Canada, France, Japan, the United States and West Germany are to visit China to assist in a gigantic university development programme supported by the World Bank. About 75 of them will go this year.

The \$300m programme for higher education is the first project to be

assisted by the World Bank in China since it joined the institution in 1980. Financed in equal portions by the bank, the Chinese Government and the International Development Association, the programme is moving forward very quickly.

It is to help to increase enrolment of science and engineering students at 28 leading universities from 92,000 to 125,000, introduce graduate degree programmes, improve the quality of teaching and research and strengthen the management of universities and the ministry of education. The project also includes the purchase of a wide range of sophisticated teaching aids.

The visitors are to help build a new

infrastructure for science and technology training in a country which has one of the world's lowest university enrolment rates.

Western administrative support for the project is provided by the National Academy of Sciences, a private society of distinguished scholars based in Washington. The academy also administers other projects in China and elsewhere in the developing regions concerned with science in the service of agriculture, public health and education.

The specialists, who are being sent to China under a \$5m contract, have been selected by an international advisory panel established by the

Peking education ministry. The chairman of the panel is Dr Dale R. Corson, the physicist and president emeritus of Cornell University in the United States. The co-chairmen are Dr Eduard Prestel of the University of Hanover, Dr Lionel Salem of the University of Paris-Sud, Dr O. L. Zienkiewicz of the University of Wales and Dr Edward Slater of the University of Amsterdam.

The panel works in conjunction with the Chinese Review Commission which is chaired by Dr Zhang Guang-don, an eminent hydraulic engineer, vice president of Qinghua University and a member of the Chinese Academy of Sciences.

Staff may lose right to strike

from Emil Zubryn

CUERNAVACA
Proposals to withdraw the right to strike from university staff are meeting vigorous opposition in Mexico. There are fears of social unrest if the new administration tries to force through legislation.

The new measures were put forward at a recent meeting of the National Justice Council, when it was also proposed that the Mexican Attorney General's Office should be empowered to prohibit university unions from engaging in politics. Protests from unions and legal experts have been numerous and angry, solidifying the labour sector against the government.

Most Mexican experts in jurisprudence have supported the accusation made by Miguel Octavio Silva Curi, professor of labour law at the University of Puebla, that the official intent is anti-unionist. He added that a suppression of strikes in universities is an "absurd" measure since it is not possible that this right can be exercised by some workers, and not others.

While there has been a good deal of labour unrest in Mexican universities over the past few years, both over increased salaries and educational policies, the press and informed educational observers have labelled the drive against university strikes as a political move.

The forces marshalling against the governmental attempt at university strike suppression, have stated that if the right to strike should be eliminated, it would make impotent the only legal arm which workers have to protect their rights.

In one of the rare records between labour and school administrations, political economic policies were more damaging to educational goals than strikes. Coinciding in these views were researchers of the National University of Mexico (UNAM), the Autonomous Metropolitan University (UAM) and the Union of UAM Workers (STUAM).

University and union researchers asserted that as a result of cutbacks in university budgets, and in other institutes of higher learning, more students have been abandoning their courses.

University and labour researchers, in their report, stressed that the government has persistently neglected the educative sector and research. As a consequence, universities have been unable to initiate new career studies and postgraduate courses. There has always been a chronic lack of funds for research. Now, coupled with the notable increase in student desertion from campuses, the researchers labelled Mexico's present educative system as "very grave."

Research investigation at Harvard

Another case of suspected research fraud in a Harvard medical laboratory is under investigation. The new case was reported by the Department of Health and Human Services just two days after the government had issued a strongly-worded memo to Harvard for its failure to look adequately into the falsification of data in a series of costly cardiovascular experiments.

The dean of the medical college, Dr Daniel Tosteson, telephoned the director of extramural research and training, Dr William Raub, at the government's National Institutes of Health, the department's biological research arm, with news that the university had established an internal panel of inquiry on the matter on February 18.

According to Dr Raub's office, the government will not initiate any action of its own until hearing from that panel, which is composed entirely of Harvard teaching and research staff. The name of the research fellow, an associate in the department of rheumatology at the Harvard-affiliated Brigham and Women's Hospital in Boston, was not disclosed.

The chief physician of that department, Dr K. Frank Austen, said that the research fellow under question had been placed on leave of absence until the matter is cleared. In tandem with the medical school inquiry, a standing committee at the Massachusetts General Hospital is reviewing research the physician contributed to while in a four-year residency programme there.

The case, which involves arthritis experiments, came to light when the research fellow could not provide Dr Austen with supporting evidence for his laboratory results.

Unlike the highly publicized case of Dr John Darsee, who received the stiffest penalties ever meted out by the Government agency for fabricating heart-attack studies, none of the questionable data in this new case has been published. In Dr Darsee's case, nine articles he had written or co-authored with one of the nation's most eminent cardiologists, Dr Eugene Braunwald, were retracted.

Dr Darsee was barred from participating in any project funded by the National Institutes of Health for 10 years and Harvard has been ordered to reimburse the government \$122,371 it received to sponsor the experiments. In this latest case, according to a representative of the National Institutes in Washington, little if any federal money is involved.

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Call for student union in Mexico

A growing number of student organizations in Mexico want to form a National Students Union.

Student leaders who prefer anonymity, with reason, claim that Mexican youth cannot remain isolated from other sectors of society.

Their demands include a freezing of enrolment quotas in universities; more scholarships and classroom facilities; public transport fares discounts; larger university budgets; autonomy in universities; and a "democratization" of centres of higher learning.

US clamps down on Libyans

from E. Patrick McQuaid

CAMBRIDGE Mass
The United States government plans to throw hundreds of Libyan students out of courses in aviation, flight maintenance and operations, and all nuclear-related studies at colleges, universities, and vocational training schools throughout the nation.

The ruling also prohibits changes in non-immigrant status and bars reinstatement of student status, thus placing many of the affected Libyans in danger of deportation. Once students enrolled in these special programmes are dropped they will lose their student status if they do not switch to other courses within the same institution because the ruling also denies them the right to transfer to other schools.

Mr Michael Heilman, an attorney for the US Immigration and Naturalization Service, said that Libyan applications for transfer to other studies within the same institution would be reviewed individually to determine if their move "is a subterfuge."

The Libyans are each being notified that they will be placed on "administrative voluntary departure" which allows them 30 days to comply with the ruling or face administrative action. Schools do not face penalties, said Mr Heilman, for refusing to expel the selected students.

Mr Heilman believes there are between 4,000 and 5,000 Libyan students in America. According to *Open Doors*, published annually by the Institute of International Education in New York, there are roughly



Mr Qaddafi: expected to retaliate

3,000 Libyan students.

The ruling is expected to affect some 500 Libyans, said Mr Heilman. The Immigration office, a wing of the Federal Department of Justice, has a list of students and where they are currently enrolled.

In May 1981, with tension between the United States and Libya escalating, President Reagan ordered the expulsion of all Libyan diplomats. At the time his decision was to have no effect on students, according to the US State Department. Since then, however, the new secretary of state, Mr George Shultz, has ruled that "aviation and nuclear-related training of foreign nationals in the United States, whose skills could be used by the government of Libya, are detrimental to the security of the United States."

The ruling affects also "third country nationals acting on behalf of Li-



Mr Shultz: controversial ruling

byan entities" and bars employment as well as education and training to such people.

Mr Heilman unofficially expects that the Libyan chief of state, President Qaddafi, will retaliate. Already, President Qaddafi has announced plans to reorganize his military, a move American analysts say is intended to oust Western advisers and replace them with Soviet recruits.

According to Mr Heilman the ruling is the most restrictive the government has issued regarding students from nations where US relations are strained. Even during the height of difficulties with Iran, he said, the government's only restriction was that Iranian students report on their activities and whereabouts.

Various organizations and agencies concerned with foreign student affairs are protesting about the order.

Norway's district colleges go from strength to strength

by Henry Wasser

Norway is currently evaluating its most distinctive reform in higher education. The goal of the Social Democratic Party is a district college for each of Norway's 20 counties. There are presently 17 district colleges ranging from deeply rural to completely town based.

While subject to the "academic drift" that two-year colleges face in other countries, Norway managed to develop distinct traits.

Under the leadership of former minister of education of Kjøbo Ege-land, district colleges such as those in Kristiansand and Stavanger succeeded in being budgeted in substantial fashion for research. Many of the faculty were those well qualified for university positions in the expanding days of higher education but for whom only positions in the two-year colleges were available.

Courses of special vocational interest were developed, such as a one year course for bookbinders inspired by the Association of Book Sellers but increasingly the district colleges established courses which counted as university credits.

The universities were reluctant to accept transfers and attempted to enforce a foundation course. "Introduction to philosophy" on all students working towards a degree. This

course, at first available only in the universities can now be taken in various regions of the country in adult education centres.

The district colleges, using external examinations were able to have their year courses (grunnlag) accepted as the same as university courses. Debate now centres on whether the *melanifag* (a year and a half course) can be offered at district colleges.

Meanwhile, since 1981, the higher education non-university units (*høgskole*) have been able to offer a first degree by the accumulation of sufficient credits. A college of education generally offers three years of post-secondary work. With the addition of a *grunnlag* taken elsewhere in a non-university higher education institution such as a district college, a student may receive a degree without enrolling in a university. Or a student may put together two *grunnlag* and a *melanifag* from the district colleges and other higher education units.

The Norwegian district college has managed two unusual achievements. A degree may be achieved entirely within these non-university institutions. An approximate university workload (not and university level) is obtained by some district colleges, especially those in Stavanger and Kristiansand.

Expansion in Nairobi

by John O'Leary

As staff and students at the University of Nairobi wait to hear when the government will lift its closure order, a second university in Nairobi is preparing to expand.

The International University-Africa, based in San Diego, California, and with campuses in England and Mexico, was not penalized after last year's attempted coup involving a number of students. Partly as a result of the protracted closure of the main university, the private institution has attracted increasing numbers of intending students.

An initial enrolment of 16 students in 1975 had grown to 250 at the start of this year, bringing accusations of overcrowding at its site near the centre of Nairobi. Next month the International University will move into the former Mayfair Hotel nearby after a long search for larger premises.

A statement from the university repeated its primary commitment to the education of Kenyans but said that the Nairobi campus now included 12 African nationalities as well as students from the Middle East, Europe, Asia and North America. Almost 60 undergraduates, and 60 postgraduates will receive degrees there in June.

The university's charter states that at least 40 per cent of the student body must be Kenyan. The only other higher education institution in the country which has been open to

Ceaurescu

New Romanian legislation which obliges all would-be emigrants to refund the state with the cost of their education is not a breach of the Helsinki Final Act. President Nicolae Ceausescu claimed during his recent visit to Vienna.

Alexander Wachsmuth of the West German news agency DPA, President Ceausescu said that foreign criticism of the law amounted to "attempts to interfere in Romania's internal affairs."

Indeed, said Ceausescu, far from being a breach of human rights, the legislation, in Romanian eyes, was "an act of justice and equity" which pinpointed the obligations incumbent on all Romanian citizens. He said on all Romanian citizens educational establishments were obliged to work for a certain number of years in jobs assigned to them by the state, else repay the cost of their higher education. Since, however, not many young people refused to take up their assigned jobs, cases of repayment by young people remaining in Romania were extremely rare.

Bill redefines role of universities

from Guy Neave

PARIS
The main lines of the higher education guideline bill, shortly to be put before parliament, were discussed at a cabinet meeting last week. The bill, presented by M Alain Savary, minister of education, will replace the *Loi d'Orientation*, passed in November 1968 to bring peace to the strife-ridden French universities.

Even at the draft stage, there are marked changes in the offing for higher education. The university's role is drastically redefined. Considerable emphasis is to be laid upon both professional and vocational training and the development of in-service courses is also to be a priority.

A greater emphasis is to be placed on research. Other priorities are emerging, particularly teacher training and further courses for staff later

engaged in in-service education. Despite demographic decline, French policy is to continue to invest in updating its education system and teacher education is seen as a significant vehicle for this.

The structure of undergraduate and graduate courses is to remain as at present, organized into two cycles. But there will be a considerable shift of emphasis on the type of education provided. Students will still receive a broad general education but they will also be given a vocationally relevant qualification.

With certain notable exceptions, in particular the *grandes écoles*, access to first cycle studies will not be selective.

This is not the case for second cycle work leading either to the licence or to the *maîtrise*. Though the word "selection" is not mentioned, entry to this phase will be limited by

the numbers of places available at a particular university. And in their turn, the number of places will be determined by the outlets on the labour market. This, of course, is selection by another name.

Higher education establishments are to be given a new legal status which will allow them to develop direct links with commerce and industry.

Participation in the life of individual establishments is strongly underwritten and the number of local worthies sitting on university bodies, increased. Each university will have three councils - the governing council, an academic council and a council dealing with university affairs and study courses. The vice chancellor will be elected by all three sitting together.

More details have also appeared on the future linkage between higher

education and the local or regional community. Two types of joint committee are foreseen. At departmental level this will involve a coordinating committee for higher education and at regional level a consultative committee. Their purpose will be to ensure better coordination between university development and local interests. As yet, their membership remains unspecified.

There is also the possibility of yet another national body. This will take the form of a national evaluation group to vet the type of courses developed within individual establishments.

There are also proposals for an inter-ministry commission for forward planning. Its responsibility will be to indicate where new courses and qualifications might be developed in the light of changes on the labour market.

Leavers 'had better offers'

from Bernard Kennedy

ANKARA
Professor Ihsan Dogramaci, head of the powerful Turkish higher education council has made his first public reference to the recent wave of sackings and resignations among university teaching staff. His comments came at a press conference during which he announced proposals under which the system of enforced transfer of lecturers from one university to another will be lifted.

Professor Dogramaci was not, he said, in a position of comment on the dismissal of a total of 40 teaching staff by the intervention of the martial law authorities over the last few months, since this had nothing to do with the HEC. As for the 200 or so resignations of the present academic year, the professor suggested that some were the result of attractive offers from Arab and African universities, while others were those of individuals who were not up to the job.

However, it is known that a very significant proportion of the resignees were upset by the centralization of the university system, by the dismissal of some of their colleagues or by the appointments made since the HEC was established.

One piece of good news for teaching staff is that they are not likely to have to draw lots to see which of them are to be appointed to vacant posts in far-flung universities next academic year. Instead, the HEC will have the power to make temporary appointments to these universities, the lecturers in question remaining employed by the same institution. Similarly, the rule under which academics could only be elevated to a professorial seat if they moved from one university to another will be done away with before it ever really came into effect.

Emergency measures in Venezuela

from Muriel Pilkington

CARACAS
While Venezuelans were still reeling from the drop in oil prices and the devaluation of the bolivar, which had enjoyed a stable exchange rate of 4.30 to the dollar for 20 years, Fundayacucho was one of the first government institutions to announce emergency measures.

The "Gran Mariscal de Ayacucho" Scholarship Foundation was founded in 1974 in anticipation of the transfer of technology that would be needed after the nationalization of Venezuela's mineral wealth, which took place in 1975.

Until then, the country's mineral wealth had been foreign owned. Local labour was used only for the dirty jobs, with the foreign companies importing specialists, technicians, managers, etc. As a result, Venezuelan university students had become used to having to study law, medicine and the humanities.

This, plus an almost total lack of technical colleges, meant there was a dearth of home-grown technology. Hence the need for Fundayacucho, which was named in honour of Field Marshal Antonio José de Sucre 150 years after he commanded and won the decisive battle of Ayacucho during the war of liberation against the Spaniards.

Between 1974 and the end of 1981, when the programme was temporarily suspended because of the worsening economic situation, 30,017 scholarships were granted at a cost to the state of 2,615 million bolivars, just over \$600m, or roughly \$20,000 per student.

Average figures for these years show that just over a half of the students took or are taking first degrees, the rest being postgraduates. Of first-degree students just under a half study abroad while only one tenth of the postgraduates study at home.



Education in the provinces is poor

Of the 10,228 scholarship holders still studying at the end of 1982, 6,671 were abroad. Of these, 4,898 are in the United States, 786 in France, 260 Mexico, 225 in Canada, 171 in Britain and 102 in Germany.

By 1982, the average of 4,000 scholarships awarded per year had been reduced to 2,000. That year, students were selected but their studies were deferred because of budget difficulties and it is only now that those chosen for 1982 are being called in to register.

One of the main aims of the foundation was to give preference to young people from poorer homes in the provinces in an attempt to even out the traditional imbalance between the capital, Caracas, and the rest of Venezuela. While the intention was commendable, it failed to take into account the poorer standard of secondary education in the provinces.

The state-supported foundation is reluctant to release drop-out figures that would reflect badly on the government but the rate is said to be still studying at the end of 1982, 6,671 were abroad. Of these, 4,898 are in the United States, 786 in France, 260 Mexico, 225 in Canada, 171 in Britain and 102 in Germany.

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denies breaking Helsinki agreement

In fact, the excess workforce is mainly absorbed into agriculture. This is a notoriously unpopular sector with young people, so much so that two years ago, special legislation had to be introduced to ensure that graduates of agricultural schools and colleges actually worked on the land, instead of using their diploma to secure a job in the civil service.

With virtually all employment in the gift of the state, the possibility of a graduate who refused to take up his or her assigned post - finding another more congenial job is indeed rare - at least without a close relative in a position of influence in the state or party apparatus.

The president claims the repayment arrangement is a standard obligation for "a certain number of years" but in the case of emigrants the obligation is imposed on anyone of working age (even though he or she may be close to retirement).

Emigrants also have to repay their education in western currency - which Romanian citizens are specifically forbidden to possess. In West Ger-

many and Israel (the countries most affected by the issue since it has mainly been members of Romania's German and Jewish minorities who have been allowed to emigrate in the past few years), the new legislation has been viewed as a ransom to be paid by friends and relatives abroad. Last month, when Shimon Peres, leader of the Israeli opposition Labour Party, visited Romania, he was reassured that this was not the case. Peres said in an interview on Israeli television that the president had assured him that the Israelis were under a false impression about this.

Mr Ceausescu had told him, "such family reunions will continue as they did in the past, in the same way."

Moreover, said Peres, one must remember that this was not a specifically anti-Jewish move - the rules also applied to German emigrants - and he has personally thanked Ceausescu for the fact that "Romanian Jewry is the only large Jewish community which was saved as such."

At a time when the Soviet Union is clamping down on all Jewish emigration (exit visas are now down to a few dozen a month), it is compelling the Israelis to feel that Romanian Jews are not being treated as a special case. Mr Ceausescu, however, would also dearly like to win credit as a major negotiator in the Middle East settlement (reportedly, a Nobel Peace Prize is among his greatest ambitions). Within the months Romania's Most Favoured Nation Status vis-à-vis the United States is due to expire and the State Department has made clear it cannot be renewed while Romania is imposing the "education tax."

Such a situation is specifically covered by Article 304A of the 1974 Trade Act (the "Jackson Amendment") which was introduced to counter similar repayment obligations imposed by the Soviet Union on Jewish intellectuals.

Two states stop fees extortion

from A. S. Abraham

BOMBAY
The new government of Andhra Pradesh state in south India (capital Hyderabad) has overnight abolished the extortion of capitation fees by private medical and engineering colleges. The government of neighbouring Karnataka state (capital Bangalore) is adopting a more gradual course in the matter.

In both states, Mrs Gandhi's Congress (I) party was routed in provincial elections at the beginning of the year. Both parties that came to power - in Andhra Pradesh, the Telugu Desam, led by film star N. T. Rama Rao, and in Karnataka, the Janata - had promised to abolish capitation fees. Within a month of taking office, Mr Rama Rao proved as good as his word.

In Karnataka, however, the provincial government is taking a "practical view". The chief minister, Mr Ramakrishna Hegde, denies that his party is going back on its promise saying that a "five-year scheme" to

liquidate it will be implemented as soon as the courts clear it.

The scheme, formulated by the previous Congress (I) administration, has never been enforced because medical and engineering college managements have challenged it in court.

But the Congress (I) was not serious about enforcing it either, even as it sought to abolish the exorbitant charges for admission it allowed the colleges to take in up to half as many students as before. Mr Hegde says his government will not allow them to "raise their intake further" with immediate effect.

Karnataka was the first state to charge capitation fees. Only a few places are filled purely on merit. Eight medical colleges in Karnataka officially charge between ₹3,000 and ₹4,000 for "local" candidates (resident in this state) and twice as much for "outsiders". Twenty-nine engineering colleges charge between ₹2,000 and ₹3,000. Officially, even larger amounts are said to be demanded.



Engineers 'have wide responsibility'

Lord Flowers, rector of Imperial College, London told delegates to the second world Conference on Continuing Education: "It is not enough to know how to develop a new process or invent a new technology."

In a keynote address to the conference held last week at Unesco headquarters in Paris, Lord Flowers (above) stressed the wider responsibilities of engineers to the community. "We must know whose purpose it serves and to whom it may do a disservice. We must know how much it costs and what are the alternatives," he said.

The conference, attended by some 400 delegates, took place under the patronage of M François Mitterrand, president of the French republic and of Unesco's director general, Amadou Mahtar M'Bow.

In the last ten years continuing engineering education has developed remarkably, particularly in France. It is reckoned that some 18 per cent of French engineers attend courses each year. These last on average 16 days, the conference was told.

This is partly due to the law on technological education passed in 1971. This sets aside 1.1 per cent of a company's payroll for retraining purposes.

Engineers have been especially quick in making use of its facilities. Around 700 to 800 technicians retrain each year via continuing education for engineering qualifications in France.

To some extent, continuing education is often seen as an instrument for social equality. Current French policy, however, will be to reserve a high proportion of places in the training system for engineers. They are regarded as crucial for the economic recovery of the country.

The importance of the 1971 law was given full recognition in the conference. Jacques Delors, away from his duties as France's minister of finance, was awarded the Leonardo Da Vinci medal by the president of the European Society for Engineering Education, Professor Dieter Seltzer.

Booking a place in history

Paul Flather visits the Marx Memorial Library

There was a traffic jam in the usually quiet Swains Lane which runs along one side of Highgate Cemetery on March 13. Black limousines brought East European diplomats fought for parking space, television crews jostled backpack-carrying foreigners. At the entrance postcard sellers were doing brisk business. All was in honour of the hundredth anniversary of the death of Karl Marx, who is buried in the cemetery.

Mr Gordon McLennan, general secretary of the Communist Party of Great Britain, gave the official graveside eulogy at 2.15pm, and by 2.45pm, the reported time of Marx's death in 1883, his imposing gravestone was bathed in flowers, many red carnations.

London of course played a crucial role in the development of Marx's life. He spent his last 34 years in exile in the city, much of it working in the British Museum. He died little known by Londoners, even among socialists, but he has left a significant legacy, including the Marx Memorial Library at 37a Clerkenwell Green, home of so much early labour history.

The library, a charity relying almost entirely on voluntary help and extensively on book donations has just received a much needed boost from the Greater London Council arts committee under Tony Banks as its contribution to the Marx anniversary. It has received £5,000 for mounting a lecture series and preparing an exhibition and a further £15,000 capital grant is under consideration. The GLC has also earmarked £30,000 for other events, including a picnic on Hampstead Heath.

The library dates from 1933 when radicals and socialists held a conference in the Conway Hall to decide a fitting memorial to celebrate the fiftieth anniversary of Marx's death. Speakers noted the burning of Marxist and progressive books in Nazi Germany at the time, and unanimously agreed the answer was to create a workers' school and educational centre.

The library started with 5,000 volumes that October, and gradually built up to its current stock of more than 100,000 books, pamphlets, periodicals and photographs. Indeed, Andrew Davies, the part-time librarian, admits he has no real idea of the exact number of books as every week readers from all over the world pop in to donate more volumes, on average 200-300 a week. There are thousands still to catalogue. Davies, a former Oxford law graduate, mixes his time teaching, researching the 1930s depression, and working three days a week at the library.

His prized possessions include Friedrich Engels's own marked copy of *Das Kapital*, Robert Owen's copy of *The New Moral World*, and William Morris's banner of the Ham-



Andrew Davies with Engels's copy of *Das Kapital*

mersmith Socialist Society. The library also owns an original of the first edition of *Iskra*, Lenin's newspaper, "the Spark" that led to the 1917 Bolshevik revolution.

Lenin used a room in the house to edit issues 22 to 38 of *Iskra* while he was exiled in London in 1902-03. The paper was set at a little Russian printer's shop in the East End and shipped back to Russia. The library has restored the Lenin Room with a complete set of Lenin's works, a bust of the man, and a visitors' book containing some distinguished names.

The Lenin Room is simply the most obvious manifestation of the incredible historical background of the library building. Lenin himself shared the room with Harry Quelch who was editor of the Twentieth Century Press, or "the TCP" as it was known, the first socialist press in Britain founded in the building in 1893.

In *A House on Clerkenwell Green*, Andrew Rothstein traces the unique history of the building from its origins as a Welsh charity school from 1738 to 1772; when it was owned by a "gentleman" and two penny post office; when it became the Northumberland Arms, important meeting place for working men and Chartists; when it became the London Patriotic Club in 1872, a radical workingmen's club sponsored by John Stuart Mill among others; to the time when the TCP was set up with its journal *Justice* edited by Harry Quelch. That ceased publication in 1925, and was succeeded by *Social-Democrat*, which lasted until 1933.

The library is aptly located and has used part of the GLC money to mount an exhibition on the theme of British labour movement history since the death of Marx. The next lecture in its series on the British Marxist tradition is on April 28, on the 1950s by Eddie Frow.

Davies is also preparing a permanent exhibition of the artefacts of radical and early Chartist literature collected by the late James Klugmann, for so long editor of the Communist Party journal, *Marxism Today*, though in its more orthodox days. Klugmann joined the CP in Cambridge in the days of Blunt and

Philly but was always open about his allegiances. He left his 30,000 volumes to the library, including many unique pamphlets he picked up over the years of London harrows, some dating from the Levellers in the 1640s. "A real treasure trove of stuff still to be sifted," Davies sighs. He hopes to open it on the fiftieth anniversary of the library in the autumn.

If it receives a further £15,000 from the GLC the library should be able to purchase new material to turn itself formally into a national and international centre of radicalism, socialism and early socialism. A £50,000 expansion appeal, sponsored by prominent trade unionists, academics and MPs, including Michael Foot, Christopher Hill, E. P. Thompson, and Raymond Williams, launched in 1977 is still currently short of its target.

At present the library boasts 800 individual members and 100 affiliated bodies, which together with wills and legacies, sales of the many duplicates presented to the library, donations, and research fees, covers its £20,000 a year budget. "We are very dependent on voluntary help," Davies says. Useful money comes in fees, for example, charged to Granada for research for its recent Spanish Civil War television series, and the BBC for its Marx in London series.

Current radical links are maintained with socialist scholars and trade union researchers often beavering away in the library in the evenings. The Fleet Street branch of the Electricians, Electrical, Electronic, Telecommunications, and Plumbing Union, headed by Sean Geraughy meets there, keeping up present traditions. As Joe, a South African exile who regularly works in the library, said: "There is nowhere else in the country with such a collection and with so much labour history under one roof."

"A House on Clerkenwell Green," price £1, by Andrew Rothstein, and details of the lecture series from the Marx Memorial Library 37a Clerkenwell Green, London EC1, open 2pm to 5pm weekdays, 6.30pm early closing Mondays and Fridays, Saturdays 11 to 1pm.

The NEC is currently using it for its combined numeracy course with

Pop it in the post

Computerized letters, in common experience, arrive at least once a week announcing that you and you alone (plus everyone else in the telephone book) have been singled out for this special attention.

But for distance-learning students and tutors, computer-written letters may spell the answer to a previously intractable problem of their kind of study: keeping the student motivated to the end of the course.

The letters are sent out by a system called MAIL: micro-aided computer learning. They cover two pages of A4 paper, chatty praising right answers to a test assignment, correcting wrong ones, and suggesting ways and exercises to avoid the same mistakes again. They are personally addressed to the student and "signed" by the tutor.

Yet they are entirely written by a small BBC microcomputer, printed out almost quicker than the eye can read, and - galling for conscientious tutors - the students actually prefer them to assessment and advice by human markers!

Research carried out in Scandinavia in recent years has established that distance-learning (correspondence courses) students need to hear from their tutors no more than six days after carrying out an assignment for them.

After waiting six days, the students - notoriously isolated, mainly occupied with other activities than study, and easily discouraged - are no longer interested in their last essay or test, and therefore unable to build upon any comments or advice they eventually receive back with it.

Yet the conventional marking system, whereby the work goes from student to tutor, to college for registration and then back to the student, plus the vagaries of the postal service, mean few students receive their work back in under 10, and more often, 14 days.

Cutting down that time by using multiple choice tests and computer marking the answers is nothing new: the Open University has done it for years. But the use to a student of a series of "ticks and crosses" type marking is recognized by the OU as much as anyone: hence their balance between computer-marked and tutor-marked assignments.

Under the MAIL system, the assignment can leave the student on Monday, be at the college Tuesday morning, marked and in the out-tray again by 10am and back with the student in time for breakfast on Wednesday. Even allowing for weekends and Post Office delays, there is a huge margin between that and the six-day deadline.

The system has been introduced into this country by the Cambridge-based National Extension College. Its director, Richard Freeman, spent two years trying to persuade colleges and mainframe computer manufacturers to take it on; eventually, having raised no enthusiasm, he realized the whole thing could go on a micro-computer and decided the NEC should do it itself.

Each course can have up to 15 of these tests. For each test the tutor constructs a personalized letter from a series of comments, and has to specify the number of questions, the number of blocks - the test can be subdivided into one to three blocks - the correct response letter for each question, the score for each response, block questions and block comments.

It was very cheap - £2,000 - it was easy for tutors to use - they simply have to write in the replies they want printed out for no more than four possible answers, a, b, c, or d, to no more than 10 questions for one assignment - and they could add on to it without disturbing the existing course.

Students are told from the start: "You are here to prepare for out there. When we are finished with you, you'll be in a position to go out and generate wealth for the nation."

Professor Shaw admits: "You don't teach management - you learn it on the job." So the course is aimed at giving a working knowledge of what it is like in the big bad world. It calls on over 20 separate departments within the university to combine subjects like bio-technology and engineering with marketing and accountancy. It even counts as a qualifying degree for the Institute of Chartered Accounts of Scotland.

There has been considerable interest from universities abroad. Professor Shaw feels that what is happening in Strathclyde could be the blueprint for industry management teaching for the future.

His second principle was that something done with IT could be done cheaper than otherwise, and that saving could be passed on to the learner. The third was that IT could offer greater flexibility, perhaps eventually writing courses in such a way that learners could pick out the parts they wanted.

The course's roots lie in the aftermath of Harold Wilson's "white heat

Karen Gold reports on how computer-written letters can help distance-learning students

television: "Make it Count". It will be available to other distance-learning course organizers from September and has already aroused wide interest from colleges and polytechnics.

It is typical of the potential in "the bargain basement level of information technology", which holds out exciting prospects but also severe dangers for distance learning. Mr Freeman told a recent conference on continuing education.

Open learning was about three things, he said: students learning what they wanted, not what institutions wanted them to learn; students learning when they wanted, rather than to an imposed timetable; and students learning where they wanted to be, not where other people - or the availability of expensive technology - dictated.

From this followed three principles for applying information technology to open learning. The first was that it made possible something that could not be done before, such as the very fast feedback of the MAIL system, or the new systems of teaching typing or tables and fractions to children.

All of those involved tedious, repetitive tasks, which by using simple technology - sometimes just cassette tapes - could release staff for more worthwhile work. The MAIL system may soon be adaptable for writing reports instead of letters, which would make far easier another repetitive task.

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The most important thing about the MAIL system was that the learners needed no access to any technology at all, he said. "No FE college is going to have 8,000 visual display units."

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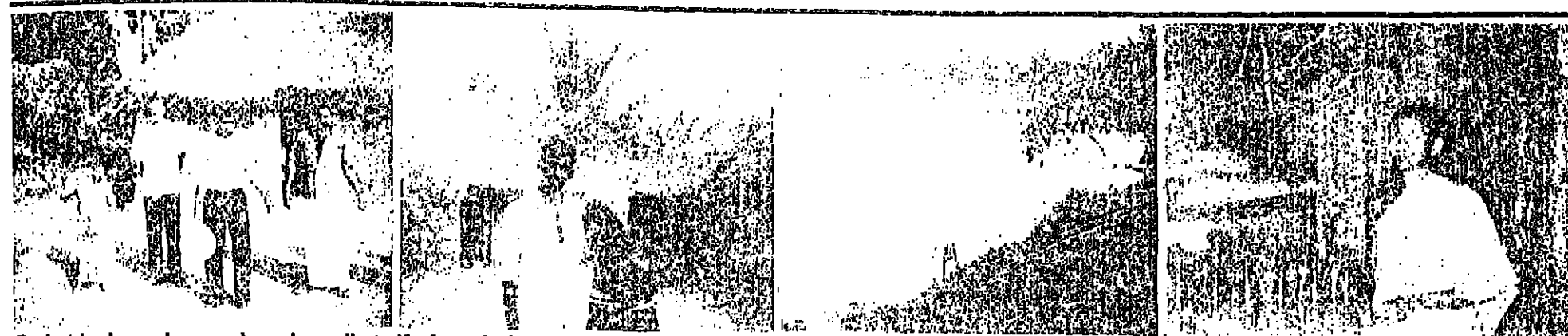
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Project leader and research worker collect gifts from the irrigation officer (centre left) on their way to see villagers complete steps to the water reservoir. The unofficial leader of the village, (far right) proudly displays the treasures of his temple.

Conserving the water of life

Patricia Santinelli visits Kelagama village in Sri Lanka to report on a United Nations University project

No sleep, intense heat and a long journey could easily lead to a jaundiced view of Kelagama village in Sri Lanka. This is where the United Nations University has successfully revived traditional water management for the irrigation of paddy rice lands as part of a project called "Sharing Traditional Technology".

In fact they are almost a prerequisite in appreciating the problems of the dry zone region in the North-west of the island, where water is the scarcest and most unpredictable resource.

By the time you have driven four hours from Colombo to Kelagama - 11 km from the nearest town and along a three-mile dirt track which is impassable by cars during the rainy season - you have one constant thought - water.

Indeed this leads to an almost irresistible urge to jump in with the frolicking buffaloes in the water reservoir, which has been reorganized to radically alter and improve the lives of many of the 600 villagers.

The importance of water, its conservation and management in the dry zone of Sri Lanka in particular is best expressed by some words in the chronicle *Mahavamsa*. These are attributed to King Parakrama Bahu I who undertook major irrigation works about 800 years ago:

"In my kingdom are many paddy fields cultivated by means of rainwater but few indeed are those which are cultivated by means of perennial streams and great tanks. By rocks and by many thick forests by great marshes is the land covered. In such

a country let not even a small quantity of water obtained by rain go to the sea without benefiting man."

Kelagama is only one of 25 villages in eight Asian countries - China, Indonesia, Japan, Malaysia, Nepal, Philippines and Thailand - which participated in the STT project. This was coordinated by its originator, Chandra Soysa, a director of Sri Lanka's Marga Institute. This is a private multidisciplinary research centre in Colombo mainly concerned with development studies.

The main aim of the now completed project was to examine how different types of traditional technologies could be revived or enhanced scientifically to help local people and the environment. A subsidiary objective was to see how the experience could be transferred either within the country or to others with similar problems.

In Kelagama, the experiment reviewed the traditional irrigation methods. These had fallen into disuse for a variety of reasons and for some time hardly any of the communally-held paddy lands and only 15 acres of private lands - amounting to a quarter of the total - had been cultivated. Most of the village's farmland was in the highlands which

nevertheless Soedjatmoko's plans approved by the UNU council but not with the entire support of some programme coordinators, has meant a total reorganization of the UNU structure. This is within the context of three main thrusts: peace, development, science and technology, overlaid by a deep commitment to communication.

The UNU now has five themes which are enacted through 12 sub-programmes and administered through three new divisions, which embrace previous work of the UNU.

One of the guiding principles of the MTP is a commitment to interdisciplinary analysis of issues and a determination to study them at all levels whether local, regional and global.

Another emphasis is that there should be horizontal integration across disciplines and vertical integration across geopolitical units.

Rector Soedjatmoko says that the MTP emerged because when he came to examine what the university had been doing, he realised that he could not look at development problems in isolation.

Soedjatmoko also firmly believes that if the charter of the university says it should be concerned with problems of human survival, then one of its central objectives should be peace.

The rector is confident that the UNU's new sub-programme on Peace and Global Transformation can shed new light on this fraught area.

The project is representative of the interdisciplinary ethos of the MTP. Its originator Dr Rajni Kothari, who is professor of political science at the University of Delhi intends to deal with peace not only as an international issue but as an issue in national and local community affairs, examining at each level the major sources of conflict

yielded cash crops as well.

Collective water management in Sri Lanka derives from the highly sophisticated irrigation technology for paddy land cultivation that dates back 2,500 years.

In fact the effective use and conservation of water through maintenance and repairs or irrigation channels, control and minimal use of water during land preparation and control of its equal use during the growing season have now become even more important.

The Sri Lankan government has embarked on a massive land settlement for smallholders. It is providing irrigation to 350,000 acres of new land in the dry zone to reduce unemployment, increase food supply and generate electricity.

The plan involves developing the largest river basin in the country, the Mahaweli. This does not depend solely on water but on its effective management and conservation.

Kelagama is a perfect example of the problems created because collective water management has gradually become a lost skill. This happened under successive colonizers, ending with the British who eliminated the Villages' Council of Elders to stop civil unrest. Its effect was to weaken

the area chosen for the experiment was the main Kelagama tank, one of two communally-controlled reservoirs and which provides irrigation for around 73 acres of land.

Once the leadership structure was set up, they had to ensure that enough paddy seed was available. Some farmers had none at all while others were almost too well provided. Two tractors were needed for ploughing. Eventually a deal was struck to hire them from their owners who would only require payment after the harvest.

The third strand was to ensure that sufficient labour was available over a concentrated period. This led to the revival of the labour exchange system and the whole process was so effective that both lowlands and highland cultivation took place simultaneously without causing a labour shortage. In effect it made use of the available labour more efficient.

As a result of this organization and management, 40 acres of land were successfully sown and reaped. At the end of the cultivation period there was still sufficient water for bathing, drinking and watering livestock. This was vital in persuading the villagers of the value of the experiment.

In addition the villagers have gained in self-confidence and self-reliance. They now know they have a means of controlling their scarcest resource more effectively. When I was there they were busy repairing the sluice gate. The water is pumped up through this over the bund (bank) and into the paddy fields. They were even finishing steps to ease access to the water tank.

Perhaps the best example of this new confidence can be seen in the irrigation officer who was elected to measure the tank's water level daily. When cultivation starts he is also responsible for ensuring that each field gets its proper allocation.

His interest was further intensified after visiting Kenya. This was his first trip outside Sri Lanka to see how other farmers coped. His verdict was that farmers there could learn from Kelagama and that they did not make the best use of their water resources.

Most villagers said they believed the experiment had been worth it, and they were looking forward to repeating it when there was enough water. One dissenting voice came from the Buddhist monk who felt that dry sowing was not good enough. What was needed was more wet sowing and water, he said.

Perhaps he and other villagers who believe that wells of water lie underground will have their hopes fulfilled when Marga Institute carries out tests to see if it is worth drilling.

One concern however, is for the university to expand. It is now seeking external funding because its endowment fund is not sufficient, and this could eventually affect its independent position.

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David Black talks to two lecturers whose aim is to bring some "savvy" into the lecture room

All 43 of last year's graduates from Strathclyde University's successful technology and business studies BSc course got jobs. Former students from the course's first intake in 1974 are now commanding five figure salaries, and some top £20,000 a year.

Against a background of 20 per cent graduate unemployment, competition for this year's intake has been the stiffest yet, with seven applications for each of the 44 places.

But despite its success, and the demand for places, plans to expand the course have been shelved indefinitely.

However, compared with Strathclyde University as a whole the course has fared well. It had to trim its budget by a mere four per cent compared with an overall 14 per cent.

It escaped largely as a result of encouragement from the UGC and, according to Professor Robert Shaw, who runs the course, the boundless goodwill of the university senate.

But the course has one over-riding

Oiling the wheels of industry

requirement - it must maintain a high staff-student ratio. One year the intake shot up to 52 because more students had satisfied their provisional offers than had been expected. The other half of the course's two-man team, Dr Keith Macrosson claims: "Through that we found our level. We were creaking at the seams. There comes a point that the core staff can't cope, can't give the level of close relations that's desirable."

Professor Shaw agreed: "With two full-time staff we can cope with an upper limit of 50, but moving beyond that, to provide the level of pastoral care necessary, we need more staff."

The course is part of Strathclyde's business school which includes law, business administration and economics departments. At present those departments as well as engineering and science schools all contribute to the course.

He believes that as former stu-

dents rise up the power ladders in industry, there will be a greater awareness of the course's potential and even the possibility of outside sponsored research funding.

Already, one of the course's 1978 graduates, who has now become head of a firm employing 280 people, has been directing prospective managers to the course. But Professor Shaw rejects the label of a "Mafia". He calls it "lubricating the wheels of industry".

But passports to this school are not gained by mere academic success. Running a business demands "savvy" and that is what Professor Shaw demands too.

"Not only must they be numerate and literate, they must see leadership and the ability to communicate, I want drive before good grades," he says.

The course's roots lie in the aftermath of Harold Wilson's "white heat

of technology" speech, and the Swann and Dainton reports in the late 1960s. What was being advocated was a more vocational approach in preparing graduates.

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Sandra Hempel takes up the case of postgraduate students never told exactly why they failed to gain PhDs

Last year Mr. Alistair Wilson announced he was taking Hull University to the European Court of Human Rights over his failure to obtain a PhD. His move followed months of dispute with the university during which he appealed to the Privy Council, to the Prime Minister and to the Lord Chancellor. All said they were powerless to act.

As soon as Mr. Wilson's story was told in the press he received phone calls and letters from other postgraduate students engaged in lengthy battles with other universities over awards. Some, Mr. Wilson claims, were afraid to publicize their cases for fear of damaging their academic careers.

Their complaints varied. Some believed they had been denied the supervision and guidance to which they were entitled. Some questioned the competence of their examiners. Others wanted to know the precise grounds on which their work had failed. All were angry at what they claimed was the high-handed behaviour of the universities which offered them no redress against judgments never explained.

Mr. Wilson was a part-time student at Hull for three years and the presented a thesis on the role of educational television in local authorities. He was told his work was not extensive enough and was offered an M Phil instead of a PhD. He complained to the university court and Hull says his case was considered by the arts faculty board and the senate, both of which rejected his appeal. He was then advised to appeal to the Visitor who has no jurisdiction in academic matters. In Hull's case the Visitor is the Queen, acting through the Privy Council.

Mr. Wilson says no proper appeals procedure exists to air his case and he was refused the chance to present his arguments in person. In fact Hull introduced a postgraduate review procedure last year too late for Mr. Wilson and much to his disgust, unknown to him while he was in the middle of correspondence with the Privy Council office.

The university says the procedure was introduced as part of a larger review following the Swinerton-Dyer report which blamed universities for the poor completion rates of higher degree students and that it had no connexion with the Wilson case. Hull says the review offers nothing new anyway but merely makes official procedures that were already in place.

Although the procedure includes the right, much sought-after by Mr. Wilson, to meet the committee and present complaints, its terms of reference are strictly confined to investigating allegations that the conduct of the examinations has been procedurally irregular or unfair. There is no provision for challenging the academic judgment of the examiners.

Mr. Wilson claims that this makes the examination of higher degrees less fair than that for O levels and questions the whole practice of presenting a thesis as an examination. He said: "External and internal examiners, sometimes of dubious qualifications, read the thesis and can pronounce upon it with bias or prejudice, and the student is not allowed access to their reports."

Mrs. Anne Hawkins, organizer at the Centre for Statistical Education at the Institute of Education, London, is also pursuing a complaint against Hull. She claims her examiners were not competent in the main topic area of her thesis. Professor Harvey Goldfield, head of the department of statistics and computing at the Institute, is backing her call for a further opinion from "more independent examiners."

The response of Hull University was to process the appeal in a formal manner, simply concerning itself with the procedures used during the conduct of the examination. There was no response from the chairman of the relevant board of studies or any administrative official of the university to the substance of the points made by and on behalf of the candidate.

Like Mr. Wilson this candidate was not allowed to present a case in person and was offered instead an MSc although the grounds for this were not stated. Hull will not comment on either case because they are still under adjudication.

Rejects who want to know why



Mr. Wilson: "system unfair"

Mrs. Fiona Master has been pursuing her case against Leeds University since May 1980 when her PhD thesis was rejected. She is asking for permission to resubmit, both on the grounds of illness during the writing-up and the viva and because she claims supervision was inadequate. Leeds is not discussing the case publicly but is known to feel that it offered Mrs. Master every chance but that her work simply failed to meet the standards of originality and comprehensiveness needed for a PhD. The university prides itself on demanding an original work of scholarship from PhD candidates rather than just proof that the student has completed a training exercise.

Appeals at Leeds are considered by a higher degrees committee, then by the senate, followed by the vice-chancellor. The complainant can then appeal to the Visitor. The powers of the Visitor are set out in the charters of individual institutions and are not necessarily the same. In some universities including Hull, Leeds, Bristol, Keele, Liverpool, Manchester, Reading and Southampton, the Visitor may inspect the university's buildings, laboratories and general work, equipment and also the examination, teaching and other activities of the university. He or she is taken to be able to determine all questions about the charter, statutes and regulations.

The problem in the postgraduate issue is that the Visitor has no jurisdiction in academic matters. In a recent case involving a theology undergraduate at Kent sent down for poor work, the involvement of the Visitor, the Archbishop of Canterbury, did succeed in getting reinstatement for the student but both Dr. Runcie and the university stressed that the decision was made on compassionate rather than technical grounds.

Unless the complaint is on purely technical grounds it is usually held to be outside the Visitor's sphere. But if it concerns technical matters it can often be settled by the university's own internal machinery without reference to the Visitor. It is in the grey areas where, for example, the student feels that his or her academic failure is due to reasons such as lack of supervision, wrong advice or incompetent examiners that long wrangles occur, with a great build-up of frustration and sense of injustice on the part of the student, to add to the disappointment at failure already experienced.

The role of the supervisor is the subject of frequent contention. A recent working party on postgraduate education set up by the British Psychological Society concluded that students were clearly being given far less information than was desirable about doing their PhD and that the key issue was the need to improve the effectiveness of the supervisor.

Further discussion of the role of the supervisor and a greater degree of openness about what the supervisor and student should expect

would clearly be desirable, the working party said. A survey of heads of departments found that the most frequent difficulty mentioned was that of poor supervision either because the supervisor was too laissez-faire or was incompetent.

Complaints about the supervisor are not confined to claims of lack of interest or availability. Several students felt let down because they claimed that work which was failed by the examiners had been received uncritically and, in some cases, enthusiastically by their supervisor and had been submitted because the supervisor said it was up to the required standard.

While most universities have some form of written guidelines for supervisors, these vary in content and in the amount of details given. They avoid setting minimum contact time between student and supervisor because of the very different needs of individual students and their subjects.

Mr. David Morris, assistant registrar at Leeds University said: "If you are a chemist and part of a senior research team working on a project you may hardly ever see your supervisor but this will not matter because you are in close contact with senior academics. But if you are doing a PhD in English then there is probably a lot of following your nose involved and your supervisor may need to see you quite often to recommend reading matter and to discuss your arguments with you."

The Leeds guidelines for supervisors define their first and "likely most crucial" task as helping the student to choose a topic and then making sure he or she receives the appropriate formal training. The guidelines go on to warn, however, "If the student seems to require an exceptional amount of assistance, the supervisor should resist the temptation to provide it. Moreover, if at any time in the course of a candidature, the supervisor finds himself or herself seriously doubting about the student's ability or willingness to achieve the necessary standard of work, he should warn the student and inform the head of department that he has done so."

After stating that most students need some advice on presentation, the supervisor "even if he is not asked for such advice, should see a draft outline of the thesis and read two or three chapters to make sure of his student's competence. While he should resist any temptation to read and revise the student's work, he nevertheless has a duty to protect the student against premature presentation." But it adds: "On the other hand no research student should be allowed to think that the award of a degree is guaranteed to him simply because his supervisor has given general approval to his thesis before it is submitted."

One university spokesman, while accepting that the degree and competence of supervision does vary considerably, believed that the supervisor's role was less crucial than many students assumed. "If this is true, however, then having accepted and even tacitly encouraged a candidate during years of work it is still difficult to understand why the university cannot take the trouble to see disappointed candidates in person and to explain in full the decision. The cavalier manner in which the rejection is handled, sometimes with the offer of a consolation prize of a lower degree and coupled with references to the Visitor, who will usually refuse to intervene any way, often causes as much dissatisfaction as the original failure."

While the University of Hull has a reputation for being a "soft touch" for students, its acceptance as suitable for adjudication has encouraged Mr. Wilson and his fellow complainants. Other moves have also occurred there including a recent letter in the Times from Professor Desmond Nychal, head of educational psychology at the Open University.

After months and even years of battling singly and unsuccessfully Mr. Wilson believes that he and the Leeds case was the first of forcing the issue into public scrutiny and debate. They are beginning to collect some influential allies and feel that their opponents are at last being put on the defensive.

An apathetic search for a new identity

Gunther Kloss on changes in Germany's universities which have resulted in widespread indifference

About a year ago, an article in the German weekly *Die Zeit* described an imaginary scene. Notices would appear at the entrance to the social science and humanities departments of a university, stating that they would be closed until further notice. This was because the motivation of students and staff had reached such a low point that to continue working would be irresponsible. The departments would remain closed until staff and students had sorted out the purpose of their education and training.

The author predicted that while many professors would want to verify the legal basis of such closure most staff and students would simply go home without much discussion and without taking any steps to insist on their right to work and learn. The story illustrates very well the mood of indifference and resignation in the German academic community, known as the "crisis of motivation".

What has happened? The important reforms in German universities during the late 1960s and most of the 1970s coincided with an enormous expansion of both students and staff. This began earlier and is still continuing. These two connected factors have changed the structure and ethos of German higher education without leading to a generally-accepted new definition of its role and status.

Students still flock to universities, to university-type institutions, and to Fachhochschulen (advanced vocational colleges). There are now over a million of them. The number is likely to reach 1.4 million and will not fall back even to the 1982/83 level until the mid-1990s. A quarter of the age group successfully passes the *Abitur*, the grammar-school leaving and university entrance examination; by the 1990s it may well be more than a third. Since the national call in the mid-1960s for a more highly-qualified workforce and the campaign to persuade more young people to stay longer at school, the universities have been overwhelmed by a flood of applicants. With few exceptions they are given access without restriction or selection. Staff have trebled, new buildings and whole new universities have been erected, but provision has still been unable to keep pace with demand.

School-leavers want to study, and well over two thirds do so, and the traditional pattern of almost automatic transition from grammar school to university has been maintained and extended to the higher education system. Expectations of the status and pay associated with a university degree are still high.

Even subjects in which employment prospects are bad, like the very traditional arts courses, have experienced hardly any drop in new students. Almost all arts graduates used to become teachers. Where the number of undergraduates reading for the *Staatsexamen* degree has been reduced, they have simply switched to the university's parallel *Magister* degree.

School-leavers who pass the *Abitur* continue to become students because there is little else for them to do. The German economy is not geared to absorbing large numbers of them and there is a danger that they might switch apprenticeships away from younger school-leavers who are equally desperately searching for jobs.

Many students enter university full of idealism and with a sense of frustration. Many are indifferent to what they are studying. They are not interested in the subject matter, but they are interested in the status of the degree. For 20 years higher education was seen as a vehicle of social mobility. Now educational policy in general is becoming an instrument of employment policy. In this context higher education is, merely a useful device to keep youngsters off the unemployment register.

The Federal Government, on the other hand, is prepared to allocate only the minimum to higher education. The Association of German Universities (VH) has now been set up. It is a new body, but it is not a new institution. It is a new way of looking at the university system. It is a new way of looking at the university system. It is a new way of looking at the university system.



University staff are demoralized because the universities' budgets are being reduced, no new permanent posts created, and many temporary posts cut. There is also serious concern about the lack of opportunity for young, gifted researchers: many seek employment elsewhere.

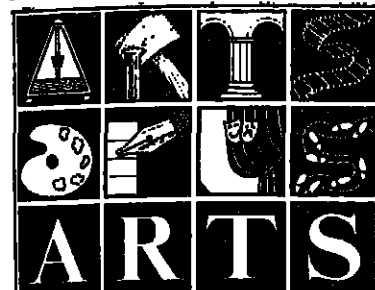
The German university is still in search of a new identity. Demographic, political and ideological pressures have forced it to move towards a large institution where bigger numbers demand and obtain a higher education which is still modelled on the traditional pattern. In spite of an enforced adaptation of its internal structures to more modern and democratic thinking the attitude of many of the older staff has remained in the traditionalist, elitist mould. Among middle-aged and younger members of the academic profession a neo-conservatism is gaining ground. There are clear signs of this trend.

Academics generally seem to be preoccupied with immediate problems and lack a longer-term perspective. They complain about too many badly-prepared students, about impossible working conditions and about the diminishing resources at their disposal. Yet they seem to be overwhelmed by a sense of their own powerlessness vis-à-vis governments and parliaments.

German professors once enjoyed very high public esteem. Names like Spangenberg, Schlegel, Eschenburg, Mehnert or Butenandt were once almost household words. Now a Kling or Jens are the exception. The proliferation of the professional title and the opening of the universities to almost 20 per cent of the age group has changed this image: professors are no longer seen as the intellectual leaders of the country.

For 20 years higher education was seen as a vehicle of social mobility. Now educational policy in general is becoming an instrument of employment policy. In this context higher education is, merely a useful device to keep youngsters off the unemployment register.

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RUPERT CHRISTIANSEN talks to Durham's composer-in-residence. BRIAN MORTON reviews the recent work of Slade Professor Lawrence Gowing.

Bodying forth

In 1976, Sir Lawrence Gowing turned his attention away from the more conventional portraits and landscapes which had made his reputation to experiment with the imaginative potential of his own body, both as subject and as medium. Strapped to a board (and aided by an assistant), he used his physical outline as a template for a series of explorations of figural unity and painterly control. In the Serpentine Gallery's current retrospective of his work, the resultant canvases and three-dimensional constructions stand out dramatically against the Euston Road-plus-Cezanne of his earlier years.

Twentieth-century art has been largely concerned with finding alternatives to the anatomical conventions of the Renaissance. Primitive art suggested new ways of presenting the human form in abstract or expressionistic settings and Matisse, the Cubists, Gaudier-Brzeska, all took note. That modernist method reached its conclusion (or *reductio*) with the masochistic performance art of the 1960s and 1970s: Chris Burden wounded by an assistant for *Shoot*; hauled naked to a gym ceiling and dropped to make *Movie on the Way Down*; Stuart Brisley painfully retching into a bucket in the terrifying *Arbeit Macht Frei*. These artists, and others like Josef Beuys, brought the Romantic self to its knees.

What separates Gowing's experiments from those of the latter-day modernists is a concern for both tradition and control. "Is not the type for the wholeness of art... the proportionate whole of the human body?" The dismemberments of modern art were part and parcel of its activist urge to imbue paint itself with significance and to impose significance on the world; Gowing's outlook, on the contrary, is "literal and passive" rather than "dynamic and transforming". By peeling away convention and "style", it might be possible to objectively the inner existence of the painter and, at the same time, show "that somewhere in the data of actuality the virtue of art has a real existence".

Painted by painters had made petroglyphs by splitting pigment over a hard outcropping on a rock surface. Gowing (and a succession of assistants) made similar tracings of his entire body, outstretched and bound. Rather than any last-but-one conservatism, Gowing has opted for a bold and thoughtful re-appropriation of some of the most telling phrases and icons of western art: there are echoes (quite conscious) of the Crucifixion - even, perhaps, the Turin Shroud; the outstretched figure of Renaissance proportion, Vitruvian man, but "relaxed"; there are even hints of a masochistic sexuality.

Within the outlined figures, Gowing placed objects, texts, dripped paint to suggest the body's secretions.

"If my body was my instrument as well as my subject only the most accurate control would serve." Gowing does not use dripped paint in the gestural way of the Abstract Expressionists (the archetypal dynamism and transformers); "control" is Gowing's key word, just as "chance", in the sense of arbitrary convention, becomes derogatory. Jackson Pollock pursued a painterly control of chance events but his gestures were outward, activist; Gowing works from a carefully formalized inwardness.

At the same time as the figural paintings and constructions, he was using mirrors placed in series and at angles in the studio to project multiple and disjointed images of his own naked body. Here again, the experiments of the Cubists and Surrealists may seem a source but Gowing continues on a "literal", "passive" course quite distinct from the analytic or synthetic techniques of early modernism. His body is presented realistically, but prismatically; divided, with twin phalloi, comically disturbed as in fairground mirrors. When Gowing experiments with a cracked mirror, the results have a "satisfying metaphoric violence". No need for the excesses of Chris Burden when there is metaphor.

Patrick Heron has suggested that art history exaggerates and misplaces the novelty of American and European modernism. He argues that the New York style in particular did not originate there in a vacuum to be imported into lagging Britain later. British concern for metaphoric attitudes (and a degree of synthesis) made native innovations seem - after suitable delay - borrowings from bolder outsiders. Heron, Peter Lanyon, Roger Hilton suffer little from comparison with grander figures like Morris Louis, Naum Gabo and the infamous Bouys, all of whom are written up as the true innovators. Modern art owes as much to Euston and St Ives as to New York and Dusseldorf. Lawrence Gowing belongs to a remarkable native tradition of synthesis and thoughtful development, tempered with the humour and humanistic concern which is often absent from American and European styles.

Brian Morton

The Lawrence Gowing Retrospective continues at the Serpentine Gallery in London until April 24. Thereafter it can be seen in Newcastle (Hulton Gallery, May 7 - June 4); Hull (Ferreus Art Gallery, June 11 - July 17); Plymouth (City Museum and Art Gallery, July 23 - August 27).

ham, Painter as Photographer. From April 30, Perens Art Gallery, Hull. Still Occupied: a view of Hull: photographs by Peter Marshall. From April 30, City Museum and Art Gallery, Bristol. *Landscape in Britain 1850-1950*: from the Hayward Gallery, London.

From May 4, Waterhead Gallery, Bristol. *Cindy Sherman Retrospective*. Work of New York artist-photographer. From May 5, Gallery, Goldsmiths' College. *Fourways*: four traditional ways of printing, illustrated by the work of Norman Ackroyd (etchings), Trevor Allen (lino prints), Bernard Cheese (photographs) and Terry Gravett (screenprints). From May 7, City Museum and Art Gallery, Plymouth. *Alive to it All*: works by Klee, Miró, Roger Hilton and others. From May 7, Kingston Polytechnic. *The Gentle Eye*: thirty years of photography by The Observer's Jane Bown.

Events Today and tomorrow, Theatre Royal, Nottingham. Opera North in repertoire. Tomorrow, Apollo Theatre, Oxford. Welsh National Opera in repertoire. Until May 7, Contact Theatre Company, University of Manchester. The

'I like generous music'

"They haven't given me any clues - whatever I do becomes the job," says John Woolrich. His post as "composer-in-residence" at Durham University is paid for by the Northern Arts Association; he uses the music faculty as a base for operations which extend over the entire north-east area.

Woolrich is 29. His musical background is slightly unconventional, as much as he read English at Manchester University and only took up music at postgraduate level, when he studied under Edward Cowie at Lancaster. He had been a "schoolboy composer", but his technical training has been sporadic. Cowie was a challenging and impressive personality, but gave him little clay formal help. Woolrich claims that his music has become progressively more rigorous and he refreshes the long mental gestation of a piece, yet his idiom is also richly coloured, harmonically dense, quirky and impulsive. He likes the British music scene because it allows for eclecticism - "in France or Germany there's far more pressure on you to follow particular models. I like generous music, in which you can feel an individual giving out a lot". Birtwistle, Ligeti, Messiaen, Tippett, and Walton ("a late and brave romantic") are among his admirations.

His own literary enthusiasm is reflected in the titles of some of his works for chamber ensemble, "The Dark Spring", "La Bonne Vaux" (a vibrant string sextet broadcast on Radio 3 in March), and "Le Domaine mystérieux" (from Alain Fournier's novel *Le Grand Meauland*). He denies that he writes programme music with narrative or scenic intentions: "the musical idea

must always come first, and the title somehow identifies it all later. I've never read a book and thought 'I must compose something about this'. He has also written an intriguing song cycle, to texts he himself adapted from E. T. A. Hoffmann, a writer to whom he will return. More immediate plans include a BBC commission for the London Sinfonietta, and a work for Durham University Musician, paid for by Northern Arts and scored for string orchestra. He is happy to move slowly. "I've got masses of ideas, and I don't feel frustrated that I can't take hold of large musical forms or full orchestral resources just yet."

He won the Durham job against awesome competition. Two years of salary without defined responsibilities attracts just about everyone, and he thinks that one of the reasons he was chosen is because of the work he had done outside normal concert hall conditions. After Lancaster, he settled in Brighton, teaching freelance at the university and elsewhere, as well as doing a lot of school and community music work. He also composed incidental music for the unique Common Knowledge Theatre Trust in the Uak Valley, where a whole village takes part in a large-scale pageant-like play relevant to its own history and developed over a long period. "Town councillors played down councillors, and the Fire Brigade played the Fire Brigade. I spent a month teaching them a ten-bar unison song, and learnt a lot about Welsh music in the process."

He loves this sort of work, but finds the disparity between it and his more "serious" composition very strange. He has also recently encountered the Northern Arts subsidies to punk and

New Wave bands who set up little collectives in converted garages and so on, and is troubled by this: "There are strong social arguments for it, and strong musical arguments against it. I do wonder whether the money ought to come out of the Northern Arts music budget." The nearest he has got to folk-music traditions is the thought of writing a piece for the county brass band. Woolrich spends a lot of time in schools, sometimes taking undergraduate musicians with him to illustrate his workshop and listening sessions. He is also involved with the university New Music Group, writing a piece for them, conducting, and giving informal advice to student composers. He lives on campus in Hatfield College, but has few fixed teaching duties. His relations with the music faculty are thoroughly cordial. It is what might once have been described as a gentleman's arrangement, and Woolrich initially felt somewhat baffled by his lack of a specific brief for the post.

I'm adjusting to it now, and finding plenty to do. Everyone's very good about not putting pressure on you, because you have this anomalous status as a creative artist in an otherwise academic environment, but at the time they obviously want me to contribute something to the university and the Northern Arts area. The only sad thing is that you spend the first year finding out about it all and setting projects up, while you don't reap the rewards until the second year, and then it's all over. But I've no complaints - it's a marvellous position to be in.

Rupert Christiansen



Founded in 1933, the Artists International Association was a radical force in the cause of anti-fascism, and it continued as a political body until 1953. A major exhibition of work produced by members of the AIA is currently on show at the Museum of Modern Art in Oxford: the over 300 items include Derek Chittock's "The Arrest of the Dockers", shown above. The exhibition continues at MOMA until May 22. Later in the year it can be seen in Bradford, Nottingham and Hull.

Events

New Exhibitions From tomorrow, Arts Centre, Aberystwyth. *Michael Cockerell and his Pupils*: an exhibition of pottery. From April 18, Senate House Exhibition Hall, University of Liverpool. Sefton Guild of Artists: paintings, drawings. From April 19, Art Gallery, Bangor. *Paper as Image*: Arts Council exhibition. From April 20, Crafts Council Gallery, London. *The Jewellery Project*: new designs in British and European work. From April 23, Fitzwilliam Museum, Cambridge. Tolly Colvill exhibition. Forth National Exhibition: work by 83 contemporary artists. East Anglia. *Private Views*: portraits and self-portraits. From April 27, Ashmolean Museum, Oxford. *Elbas Ashmole (1617-1692)*: The *Book of the Ashmolean Museum* and the *Book of the Ashmolean Museum*. Celebrates the tercentenary of the museum. From April 30, University of Nottingham.

Comedy of Errors. Monday April 18 to Saturday 23. Palace Theatre, Manchester. Opera North. Monday April 18 to Saturday May 14. Birmingham Repertory Theatre. British premiere of Arthur Miller's latest play *The American Clock*.

Tuesday April 19, Barbican Centre, London. John Fuller, D. M. Thomas, Alan Brownjohn and Miriam Hobbs read their poetry. Tuesday April 19 and Wednesday 20. Trent Polytechnic. Impact Theatre Company. Thursday April 21 to Saturday 23. Riverside Theatre, New University of Ulster. Stageflight Company presents *A Streetcar Named Desire*. Friday April 22 and Saturday 23. Theatre Workshop, Edinburgh. *The House with Green Shutters* by George Douglas Brown, presented by Theatre Communicado.

Saturday April 23 to Saturday May 2. Liverpool Playhouse. *City Echoes* by Jim McGovern. Sunday April 24. Film: Theatre, University of Essex. D. W. Griffith's *Intolerance*. Monday April 25. Arts Centre, University of Warwick. Vladimir Ashkenazy

conducts Schubert and Chopin. Monday April 25 to Saturday 30. New Theatre, Hull. Portman Theatrical Productions present *Hobson's Choice*. Wednesday April 27. Elphinstone Hall, Old Aberdeen. Lunchtime concert: Medieval music (including Leonin, Perotin and Machaut).

Wednesday April 27. Arts Centre, University of Warwick. J. L. Mankiewicz's *Guy and Dolls*. Thursday April 28. Museum of London. "Made in London" film season (every Tuesday and Thursday) continues with Basil Dean's 1930 film *Danger*. Cast includes Gerald du Maurier and Lewis Casson. Thursday April 28. Arts Centre, Aberystwyth. Sioned Williams: harpist. Thursday April 28. Diamond Theatre, New University of Ulster. Ulster Orchestra, conductor Brydon Thomson: Wagner, *Hansel and Gretel*.

Saturday April 30 to Monday May 2. Arts Centre, University of Warwick. Simon Rattle conducts the City of Birmingham Symphony Orchestra in seven Sibelius symphonies. Saturday April 30 to Monday May 2. University of Leeds. *A Renaissance Festival*. Theatrical and musical events centring on the performance of the entire Chester

Cycle of Mystery Plays. Sunday May 1. Grubbenkian Theatre, University of Kent. Court String Quartet: Mozart, Robert Simpson, Schumann. Sunday May 1. Van Mildert College, University of Durham. Fine Arts Brass Ensemble. Monday May 2 to Saturday 7. Theatre Royal, Norwich. Ballet Rambert. Tuesday May 3. Turner Sims Concert Hall, University of Southampton. The English Chamber Orchestra, Philip Ledger (conductor/harpichord) in a programme of Bach.

Tuesday May 3 to Saturday May 7. Drama Department, University of Manchester. Ian Neill's *The Man from Solamancher*. Thursday May 5. University of Lancaster. Medical Sizing Quartet with John Clegg (piano): Mozart, Brahms, Beethoven. Thursday May 5. MacRobert Arts Centre, University of Stirling. *American Evening*: Programme of Copland, Barber, Ives and Gershwin. Thursday May 5 and Friday May 6. Drama Department, University of Bristol. Visit by the Nanjo-Okumura Noh Theatre Troupe (who will also visit Sadler's Wells in London and the Theatre Royal Glasgow).

Sunday May 8. Arts Centre, University of Warwick. Vladimir Ashkenazy

NOTICE BOARD

Explorations of female identity: loneliness, estrangement, and fantasy. Cindy Sherman's powerful photographic self-portraits will be on show early next month at the Watershed Gallery, Bristol.



Chairs

Heriot-Watt

Professor Alan Peacock, principal of the University College at Buckingham, has been the title of honorary professor conferred upon him by Heriot-Watt University for a period of five years in recognition of his valuable contribution to the British Fairbank Research Centre.

Buckingham

Professor David Casson, at present head of the law section at the University of Surrey, has been appointed to the Rank Foundation chair of law at the University College, Buckingham. Professor Andrew Lehmann, currently director of the Institute of European Studies at the University of Hull, has been appointed to the chair of European studies.

City University, London

Visiting professors: Mr M. J. Butterfield (systems science); Mr C. T. Grammenos (shipping and shipping finance); Mr G. Hodgson (journalism); Mr G. D. Spence (electrical and electronic engineering).

Kent

Dr W. A. Armstrong, reader in social and demographic history at the University of Kent at Canterbury, has been promoted to professor of economic and social history.

Queen's, Belfast

Dr Alan Sweeney, Belfast, has been appointed to the chair of industrial engineering at the Queen's University, Belfast.

London

The University of London has announced four appointments to chairs: Dr Ronald Ernest Clements, lecturer at the University of Cambridge, to the Samuel Davidson chair of Old Testament studies at King's College; Professor Robert MacLaughlin, professor of psychology at the University of Glasgow, to the chair of social psychology at the London School of Economics; Mr Julian Peto, research scientist in the Imperial Cancer Research Fund Cancer Epidemiology and Clinical Trials Unit at the University of Oxford, to the Cancer Research Campaign chair of epidemiology at the Institute of Cancer Research; Professor Katharine Joyce Worth, professor of drama and theatre studies at Royal Holloway College, to the chair of drama and theatre studies at that college. The university has also conferred the title of professor on the following: Donald Barltrop (child health - Westminster Medical School); Philip Alexander Poole-Wilson (cardiology - Institute of Cardiology); Dr John Anthony Walworth (zoology - Westfield College).

Imperial College, London

Fellowships: Dr Anthony Rene Barringer, president, Barringer Resources Inc., Toronto and Denver; Sir Peter Densdale, CBE, chairman, Shell Transport and Trading Company, vice chairman, Committee of Managing Directors of Royal Dutch/Shell Companies; Emeritus Professor Sir Hugh Ford, FRS, senior research fellow, department of medical engineering, Imperial College; Emeritus Professor William R. S. Gordon, FRS, senior research fellow, department of physics, Imperial College; Sir William Hawthorne, CBE, FRS, Master of Churchill College, Cambridge. Honorary Associateship of the Royal Society of Medicine: Dr Stephen S. F. Hul, chairman and managing director of the Yang King Mining Company, Hong Kong. Honorary Associateship of the Royal Society of Medicine: Dr Arthur George Lovelady, formerly at Imperial College, and Mrs Marjorie Lovelady, Catering Supervisor at the Imperial College athletic ground, Harington.

Royal College of Surgeons

Honorary fellowships: Professor Prem Kumar, professor of otolaryngology in the University of Delhi; Sir Clarence Leggatt, MBE, FRACS, of Brisbane, Australia; Mr Percy Levy of the

Polytechnics

Honorary fellowships: Sir Melvyn Rosser, FCA, chairman of the Welsh Council, 1972 to 1980; Sir Alex Smith, former director and chief scientist of Rolls Royce, appointed first director of Manchester Polytechnic in 1981.

Genetics

Genetics. Genes on the Circle Line (S299; prog 4).

Monday April 18

8.00 Genetics. Genes on the Circle Line (S299; prog 4).

Tuesday April 19

8.00 The 19th Century Novel and its Legacy. Dickens and Parnassus (S210; prog 4).

Wednesday April 20

8.00 Personality and Learning. Infant Cognition (S211; prog 4).

Thursday April 21

8.00 Introduction to Pure Mathematics. Complete (S212; prog 4).

Friday April 22

8.00 Mathematical Models and Methods. Linear Programming (S213; prog 4).

Saturday April 23

8.00 Control Engineering. About Frequency Response (S214; prog 4).

Sunday April 24

8.00 Microelectronics. Running the Market (D222; prog 4).

Monday April 25

8.00 Microelectronics. Running the Market (D222; prog 4).

Tuesday April 26

8.00 Microelectronics. Running the Market (D222; prog 4).

Honorary degrees

Birmingham

DSc Sir Alan Cottrell, Master of Jesus College, Cambridge; Sir Alastair Currie, professor of pathology at the University of Edinburgh; Sir John M. Ferguson, engineering consultant; Sir Percy Kent, geologist.

Exeter

DLLit Professor F. J. Fisher, professor of economic history, London School of Economics 1954-75; Mr John Fowler, novelist, author of *The French Lieutenant's Woman* and *Mantissa*; L.D. Mr Hugh Greenwood, OBE, Liverpool businessman who endowed the Children's Research Fund in 1962; the Hon Sir Isaac Newton Warner, judge of the High Court of Justice, Chancery Division.

Hull

DLit Emeritus Professor Raymond Laurence Brett, G. F. Grant Professor of English in the university until 1982; Mr Francis F. Johnson, JP, Bridlington architect, member of the York Diocesan Committee for the care of churches; L.D. Mr T. H. F. Farrell, chairman of the university council; Sir Frederick Wood, chairman and managing director of Croda International.

Nottingham

DSc Dr Robert Edwards, reader in physiology, University of Cambridge; Professor L. N. Seddon, Sinson Professor of Mathematics at Glasgow University; Mr R. H. Septer, medical director, Bourne Hall Clinic, pioneer (with Dr R. C. Edwards) of *in vitro* fertilization in human subjects.

Sheffield

DLLit Mr George Ewart Evans, author of *Ask the Old People* and *Out of the Hay*; DSc Dr David Ingram, former professor of physics at Keele.

Southampton

DLLit Mr Lloyd A. Harrison, vice-president of the university council.

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I will admit I walked into class with a bias. Through writing assignments and comments in and out of discussion sessions, class 21.750 had indicated a general interest in the topic of education. Freshers for the most part, my students reflected on disciplinary problems, short funds and poor teaching in the public schools they had recently left; they seemed awed by the pressures of Massachusetts Institute of Technology, wrote descriptions of themselves nodding off in lectures after a night of problems sets, nodded off before my very eyes. I culled a number of pieces from our essay reader - Fielding, Newman, Arnold, Russell as backdrop - and had worked up a kind of pedagogic opposition between my two main texts by the time we met at the institute one morning last fall; it was about mid-semester, for me as for my freshers, the first at MIT.

One of the key texts was R. W. Emerson's *The American Scholar*, which he delivered to the Harvard chapter of Phi Beta Kappa in 1837. Emerson phis:

It is one of those fables, which out of an unknown antiquity, convey an unlooked-for wisdom, that the gods, in the beginning, divided Man into men, that he might be more helpful to himself; just as the hand was divided into fingers, the better to answer its end. . . . In this distribution of functions, the scholar is the delegated intellect. In the right state, he is, *Man Thinking*.

He goes on to discuss man's relation to nature, to history, and to what he calls action (we might now say praxis), citing name by name all the lights of the English literary and philosophical tradition as well as several scientists - Linnaeus, Davy, Cuvier - and culminating with Goethe and Swedenborg, the immediate ground of his own transcendentalism. Then, having warned against the worship of books, he moves into the peroration, steering his audience away from "the courtly muses of Europe" and condemning American avarice, our base goals and shoddy business practices. Each person should stand on his or her instincts, and the world will come 'round.

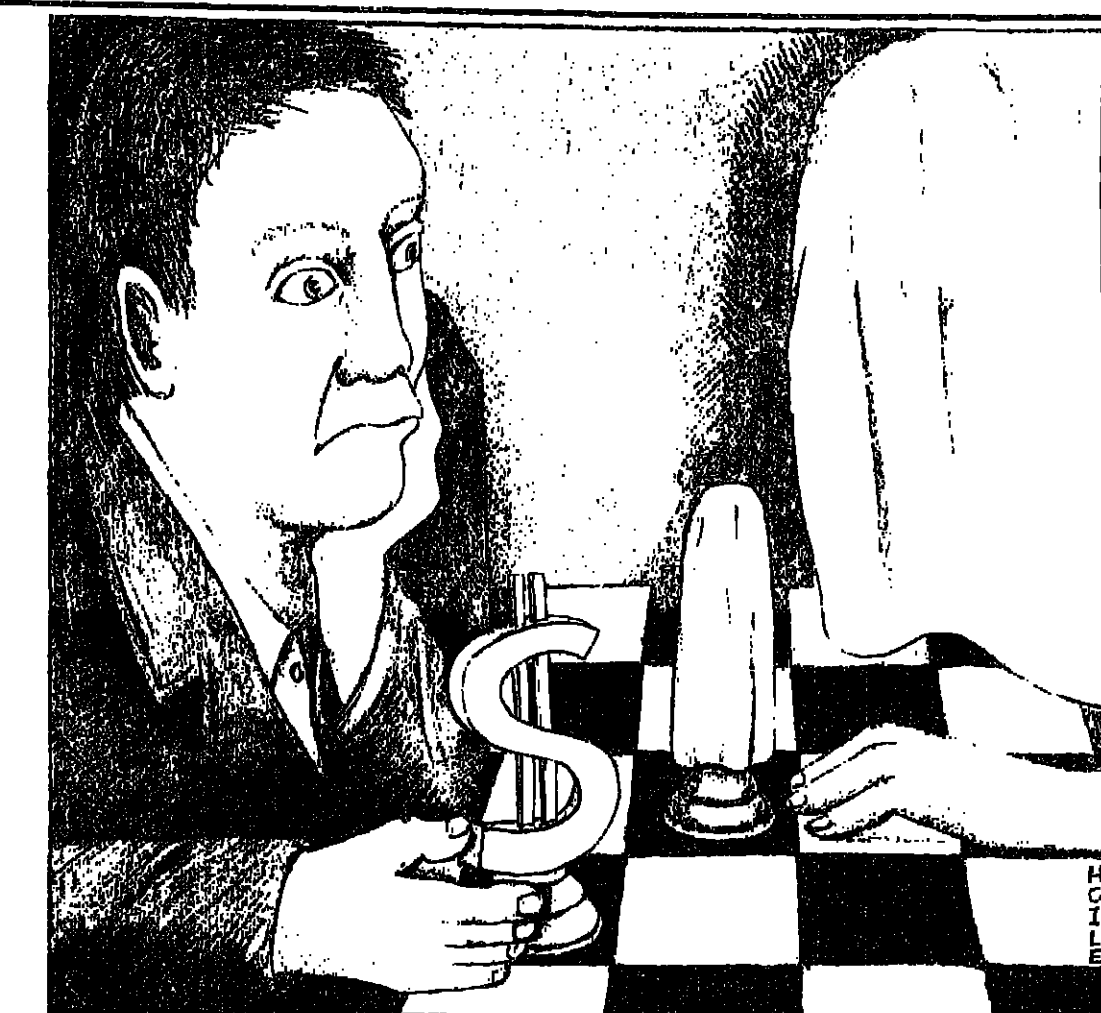
Now place beside it - as I did that morning - T. H. Huxley's *A Liberal Education and Where to Find It*, which Huxley delivered in 1869 to the South London Working Men's College. At the heart of his speech, Huxley articulates his metaphor of life as a complex game of chess:

It is a game which has been played for untold ages, every man and woman of us being one of the two players in a game of his or her own. The chessboard is the world, the pieces are the phenomena of the universe, the rules of the game are what we call the laws of Nature. The player on the other side is hidden from us. We know that his play is always fair, just, and patient.

Huxley then presents his ideally educated man, whose "body is the ready servant of his will, . . . whose intellect is a clear, cold, logic engine, with all its parts of equal strength, and in smooth working order". Then, level by level, he exposes the English educational system in all its disorder, citing contemporary authorities in the field and invoking Grote and Mill, the scientists Faraday, Robert Brown, Lyell, and Darwin. Like Emerson, he wishes to see people in harmony with nature; and he expresses the hope, in his conclusion, that the college will soon include in its curriculum the study of "moral and social science," of the world's geography, and of literature and history. Added to the more practical training already offered by the college, such would be a complete and liberal education.

Something about the Huxley essay irritated me. I am not an avid chess player, though I respect those who are; I stopped believing in the mind as a logic engine at the age of 16, during a brief but effective phase of adolescent existentialism; and I know relatively little about the British educational system in the nineteenth century. The Emerson essay, by contrast, fitted well with my background, both in regard to the institutions and to the emphasis on humanistic studies; I, too, could say with conviction that book worship threatens the soul.

Imagine my surprise, then, my dismay, when class 21.750 unanimously declared their preference for the Huxley. You will say I should have known better: MIT opened its doors just three years before Huxley gave his address; William Barton Rogers,



The bottom line

Leigh Hafrey considers the attitudes of a class of freshers and discovers that their interests are mainly pecuniary

who presided over the early years of the institute, had many of Huxley's goals in mind when he founded the school. One has only to glance at the 1982/83 course catalogue to realize the fact, and to realize that his principles still hold. Though Emerson's Harvard lies just a mile down Massachusetts Avenue, the two institutions seem worlds apart, both physically and spiritually.

Yet the harmony of vision between Huxley and my students was not what it might have been. One of them capped our discussion by declaring: "He's more realistic and pessimistic than Emerson"; the rest nodded silent agreement. The Huxley of "pseudoscientific realism" and of "agnosticism" might have paused over the first qualifier; clearly, something has given way in the thoroughgoing nominalism with which he approached the world, and which gave integrity to his writings. As to the second term - certainly Emerson has a way of out-buoyming the most buoyant of social philosophers; but if the budding engineers of class 21.750 identified with Huxley along disciplinary lines, why did they find the English pessimistic? If they found it pessimistic, why didn't they prefer the optimist's formulation?

The answer to these questions lies, I think, with the identity of Huxley's hidden chess player, an anthropomorphism on the author's part which, under the circumstances of our discussion, mandated the substitution of Emerson's body politic. That class 21.750 should conceive of their opponents as invisible, that they should imagine them opponents rather than inclusive entities, speaks volumes about the society in which they live and about their notion of the success it will allow them. There is a touch of adolescent rebellion in their attitude, but they also display a contradictory and disheartening sense of submission. I say disheartening because it might have been prevented, for them and for thousands of top-flight high school graduates like them at the institute and other on humanistic studies; I, too, could say with conviction that book worship threatens the soul.

Imagine my surprise, then, my dismay, when class 21.750 unanimously declared their preference for the Huxley. You will say I should have known better: MIT opened its doors just three years before Huxley gave his address; William Barton Rogers,

distinction between the natural environment and the social. The elements work rationally, explicitly; but people are irrational, a nexus of violent and destructive behaviour, and there is consequently no possibility of harmony between them and their environment. They elude the parameters of reason, sowing fear and death - hence the consensus on a return to capital punishment and the elimination of such legal "ploys" by definition pose a threat to existence, unless they belong to one's own - very narrowly defined - social group. At the same time, one's personal nature requires curbing. The nature-nurture debate yields a wishful emphasis on nurture, authenticated by long and pain-filled descriptions of jogging, competition swimming and other strenuous but relatively solitary physical exercise.

The history which for Emerson and Huxley meant primarily the Western intellectual tradition here means personal history, the experience of family and friends confronting the rest of society. Foreign and minority students, such as those belonging to MIT's large Oriental-American population, emphasize the conflict of cultures, fill piety and family cohesion against American egalitarianism; they find advantages in that freedom rather differently: for them, the nuclear family went into a sudden and rapid decline about 1960 (thus, just before the birth of those recording the phenomenon). Under economic pressure, the father figure loses its contours, the mother is forced or chooses to work; children are disobedient, irreligious, and confused about their sexual identity (homosexuality, almost alone among current social issues, evokes a consistently tolerant response). And the apparent absence of a larger historical framework - be it only the narrative of the previous generation's experience - the students often turn to the Bible and various more or less established groups which purvey it. If the students' response to man's nature suggests the Mosaic law of retaliation, an eye for an eye, a tooth for a tooth, their response to man's history suggests the apocalypse, bringing with it a sense of irretrievable loss and imminent ending. For the broken water jug, they substitute the idle steel mill, the vacant store front.

Action, the third, of Emerson's preoccupations and the premise of Huxley's entire essay, unfolds for many under the sign of economic pressure and narrow professional specialization. With justice, educational experts continue to show particular attention to the plight of the disadvantaged: some haven't the headstart a good social or family background gives in the educational race to college; some haven't the means to go on, even if they do well in school. But the disease seems to me pandemic: with tuition, room and board up to \$13,000 a year at Harvard in 1983/84, no one escapes financial worries. Certainly many of the students at leading institutions are beyond frightened scholarly industry. But many are not, and the academic variant of the popular phrase "the bottom line" wields considerable influence in the classroom. Students want their money's worth: the emphasis falls on exams, academic rites of passage, portable answers and formulae for all the questions one is likely to encounter in "the real world".

Certainly, the distinction between one's school and one's real life has a long history; and the quantification of education, education by the pound if you will, has been with us at least since Emerson inveighed against such consistently material concerns, both in and out of classroom America. Yet we would claim to have progressed since Emerson's day: we know have both universal suffrage and universal education, a true democracy - at least nominally - in both regards. And since Huxley proposed his formula for a liberal education, institutions like MIT have risen to positions of prominence, even pre-eminence, on the American educational scene.

The truth is, though, that we have fallen short even of Huxley's short-term curricular goals and the effect he meant them to have. In the current state of affairs, the college graduate is all too willing to see him or herself as a wage slave, although the wages are often very high. The attitude makes itself no more strongly felt among graduating electrical engineers and computer scientists at MIT than it does among traditional liberal arts majors at Harvard and Yale, those who expect to pick up another, professional degree - JD, MBA, MD - with a quick return on investment. The apparently broad

focus of the degree in no way guarantees a correspondingly broad horizon, even in professional terms.

In the context of such short-range economic concern, Emerson's suggestion that we trust to our instincts must seem mad. Huxley proposes a practical education for the present (although it is his present), and he sees that education as the introduction to a personal, an individual competition with the hidden player and with oneself. For students preoccupied by apparently limited economic resources, the one-on-one engagement makes sense. The fact is, of course, that Huxley's hypothetical players play a just and even game: everything depends on the man or woman who confronts them. In the view of many students with whom I've worked, such fairness doesn't hold; the rules of the game are always changing, and no one seems capable of giving anything more than the most cursory instruction.

By the same token, Emerson's rejection of book-worship smacks of hubris, the cutting away of an anchor hardly lowered, or the declaration of an ignorant will to sail by dead reckoning. Emerson can afford to reject worship of the past, because he has made that past his own, because he enriches the present with a continuous re-reading of the past. For today's students, such a re-reading is impossible: they haven't got the knowledge to do it. The stress on teaching and learning methods which education programmes have fostered in recent years valorizes the present at the cost of the past; it reveals a pseudo-scientific presence for immutable mechanisms of perception and communication over the content of that activity. Huxley's chess metaphor invites such an approach because it stresses that chess life is much more complex than chess, it suggests that one can learn the rules of the game and the names of the pieces for good and all. For people who put as much faith in the fossil as in the written record, such an assertion can only stem from their wish to break a tradition, to revitalize the class-bound and failing humanistic education which represented the norm of their day.

By contrast, whatever Emerson's concern with the low and the common, his body politic derives from precisely the kind of social hierarchy which Emerson's liberal education seeks to break. Emerson transcends it, but his formula, if it can be called such, makes emulation difficult in an educational system that would preserve democratic principles. The solution must be that we take him at his word and read him as he would read others, accepting what we need. For him, the phenomena we describe influence our methods of description, and vice versa; the humanities are a record of that interaction. It is this plenitude which argues against death and the sense of finality, because it gives us tentative endings, interim formulations in the longer view. However far the fossil record may reach, we've read from it for less than two centuries. The written record - the tradition of letters - has occupied us much longer, and tells us that, whatever our limitations, something always brings us to surpass them - and this "something" includes several centuries' worth of modern scientific discovery, recast on the page for our instruction.

At a time when economic and social discord alone have currency, we must finally achieve a balanced education, scientific and humanistic, and preferably before students reach the stage where they begin to specialize for professional reasons. Only shared knowledge and the sense of a common heritage can guide us in preparing the future; without it, the future is inconceivable. Based on equal educational opportunity, Emerson's vision supplies an optimistic motive, that of moral values, for Huxley's game of chess; and the hidden player suddenly acquires a human face. For class 21.750 at the present time, the issue is one of remedial recognition. For students in years to come, that discovery should seem neither more nor less than the natural course of events.

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As a teacher and psychologist, William James was inevitably drawn into the late nineteenth-century debate about educational reform. The child had just been rediscovered and the twentieth century dedicated to it in a book by the feminist Ellen Key. Science was expected to second the humanitarian impulse and transform learning into a perpetual delight. It was Harvard itself that asked James in 1892 to give a course of lectures to the teachers of Cambridge. When he published these in 1899, he added to the 15 chapters three talks to students that deal with themes no less useful to the pedagogue, though to him the teacher part of the book was "incarnate boredom".

That teacher part naturally recapitulates facts from his *Psychology* — on the stream of consciousness, the link between mind and action, the association of ideas, the will, the laws of habit, and so on. But the great originality of *Talks to Teachers on Psychology and to Students on Some of Life's Ideals*, when it was published in 1899, was James's reasoned scepticism about the "new psychology of education". "In my humble opinion, there is no 'new psychology' worthy of the name. There is nothing but the old psychology plus a little physiology of the brain and sense and theory of evolution, and even a few refinements of introspective detail, for the most part adaptation to the teacher's use."

The fundamentals that he recited in order to acquaint teachers with the ordinary workings of the mind were important, but he warned against newly raised hopes from "research". "No elementary measure capable of being performed in the laboratory can throw any light on the actual efficiency of the subject; for the vital thing about him, his emotional and moral energy, becomes known only by the total results in the long run." Since James, talking and writing about education — the parody of thought — has swallowed billions of dollars and man-hours and has misled more than it has enlightened. "Studies" by the hundred have promised wonders and fed false hopes while contradicting one another, for they assume a sort of human mind which it was James's great contribution to have shown up as contrary to fact.

James's view of the child was typically concrete. The "little sensitive, impulsive, associative and reactive organism, partly fitted and partly free, calls for the kind of teaching that respects freedom and compulsion, individuality and the claims of common reason and common action." Such a view in 1890 was enlightened and not widespread; it was not what came to be called progressive education. James knew that a child-centred school would be as bad as a teacher-centred or book-centred one. He did not fall into the trap of supposing that a child's needs are the same as its wants. He pointed out the contrast that there is no possibility of making schoolwork always easy and attractive. Effort is always needed in maintaining the child's attention and the teacher's utmost skill in supplying interest is "to let loose the effort".

Together with concentrated advice of this kind, James uttered two warnings that nowadays teachers in training never hear. One regards what he called "the softer pedagogues" that "have taken the place of the old steep and rocky path to learning. From this lukewarm air the bracing oxygen of effort is left out. It is nonsense to suppose that every step in education can be interesting".

The second warning was that the small child will grow up and that the mental diet appropriate to "early years will cause harm if protracted. Tender solicitude must be replaced by appeals to ambition and competition and the sense of accomplishment. Accordingly, 'pupils should know their marks. The child's eagerness to know how well he does is in the line of his normal completeness of function and should never be balked except for very definite reasons indeed — though here as elsewhere concrete experience must prevail over psychological deduction'".

This wisdom is flouted almost universally today. Instead, the jargon of psychiatry replaces the direct judgment of what a pupil has done, while his performance is short-circuited by so-called objective multiple-choice tests. In other things to be learned — reading, writing, speaking

Jacques Barzun reconsiders William James's ideas on education — ideas that were decidedly unfashionable among contemporaries

William James: "A college education . . . should help you know a good man when you see him."

Untimely advice

— little care is given to fluency and precision, which means that the operation of habit is ignored. James conceived of all education as the making of useful habits.

He had no reason to imagine that schools would turn into places where death by violence, the drug habit, rape and teenage pregnancy would count as educational problems. He and his hearers were prepared for what was then childish misbehaviour and thus to accept his advice: "Bad behaviour, from the point of view of the teacher's art, is as good as a starting point as good behaviour — in fact, often a better one."

In that last maxim, we find again James's analytic mode: we start with what is natural; it is the material to work upon; but it does not set the goal, for more than one is possible and desirable. Here lies the great difference between James's pedagogy and that derived from John Dewey, which has prevailed in American schools for most of this century and in its degraded forms brought them to their present instructional paralysis. Dewey's effect on schooling was to dethrone subject matter and replace it by techniques, the main one being aimed at teaching problem solving regardless of subject. On the surface, this sounds like a fulfilment of Jamesian ideas. James, too, says that the uneducated person is "one who is nonplussed by all but the most habitual situations", whereas the educated "can extricate himself from circumstances in which he is never placed before". It looks as if we have in James the "life-adjustment" idea full blown. He certainly thought that education should be democratic and "fit the human being to his social and physical world". But two great differences destroy this apparent similarity. One is the role that Dewey assigned to the mind; the other is the sense of before and after.

To begin with the second, Dewey's doctrine allowed his interpreters to commit the mistake of "preposterism". Because a person who has been educated is able to cope with the unknown or unfamiliar, it does not follow that one who is being educated should be asked to do the same. That expectation is preposterous, the cart before the horse. Adaptation to life is not to be engineered in the classroom. The contrived situations fool only the teachers and undermine their authority by silly make-believe. James never wanted to abolish school subjects, though he said that their division was in some sense arbitrary.

The second difference from Dewey is related to the first. In setting the child to problem solving, Dewey assigns intelligence but a single track, that of analysis on "scientific" lines. James, as one can see on every page of his *Talks to Teachers*, understands the child's mind (and the adult's for that matter) as quite different. It is not an engine chugging in regular five-minute strokes; it is an artist's mind, it works by jumps of association and memory, by yielding to aesthetic tastes and indulging private tastes — all in irregular beats of attention, in appa-

rent wanderings out of which some deep sense of rationality rises to consciousness. There is no formula, for the trained or the untrained. "The total mental efficiency of a man is the resultant of the working together of all his faculties. He is too complex a being of any one of them to have the casting vote. If any one of them do have the casting vote it is more likely to be the strength of the interest he takes in what is proposed." Dewey's plan is thus another piece of preposterism. From a good mind had done its work, idiosyncratically, it will no doubt submit the results to others in Dewey form. But that is no warrant for believing or requiring that the ends serve as a prescription of the means.

Dewey is not to be charged with the culpable vagaries of high progressivism in education. His ideas, good

He wanted society to avoid becoming a mass of money-grubbers and single-track professionals

and bad, were exploited by ignorant and irresponsible people — veritable Smerdyakovs — and imposed upon children, parents and teachers alike. Anything less "pragmatic" than the present ineffectiveness of public schooling would be hard to imagine. And this permissive, "relaxed", "at your own pace" mode of instruction has generated an atmosphere notably tense, and anxious, and straining for "achievements", themselves indefinite.

Higher education in James's day had changed its spots even more completely. The American college had been topped, if not crowned by the graduate and professional schools. The physical sciences had taken over a large slice of the undergraduate curriculum and forced a new standard of intellect everywhere — specialization. Out of the bits and pieces of the college "electives" a student was supposed to educate himself and acquire or prepare for a specialty. Only two men raised their voices against the onward rush of the bandwagon: Woodrow Wilson, the president of Princeton, who maintained that the duty of a college was to "regeneralize every generation"; and William James, who in lectures and articles defined civilization in contrast to training and opposed the "PhD Octopus".

James was not battling to preserve a genteel mode of life. When he spoke of "The Social Value of the College-Bred", he wanted democracy to avoid becoming a mass of money-grubbers and single-track professionals. Education should instill an awareness of the human reality and its achievements — the humanities, which include science.

James missed no chance to decry "catalogues" — for example "The American" textbook. Moloch, in whose belly living children's minds are turned to ashes, and in which the science is pre-designed for the teacher and for the pupil com-

puted into small print and large print and paragraph headings and examination questions, and every up-to-date device for frustrating the natural movement of the mind when reading and preventing that irresponsible rumination of the material in one's own way which is the soul of culture." In short, let "virgin-minded youth" read the great books. Textbooks grew out of the specialist attitude, akin to that of the feudal lord behind his moat.

James also met a perennial question with an answer that is often quoted as if it were only a witticism struck off in conversation. It is actually a considered statement of deep social import: "Of what use is a college training? A certain amount of meditation has brought me to this as the pitiful reply which I myself can give: the best claim that a college education can possibly make on your respect, the best thing it can aspire to accomplish for you, is this: that it should help you to know the good man when you see him." The principle here is that only a developed mind can gauge the capacities that are equal to its own, or greater, or less.

It is an intuitive act, not a numerical demonstration on the basis of tests. The educated will know how to judge "sound work, slack work, sham work; precision, thoroughness and honesty." James advocated laboratory and shop work in the lower schools, to impart the concrete meaning of these terms at an early age. In adult life this authenticity is the basis of culture and it makes itself felt in a certain tone. "Tone" is to be sure a terribly vague word to use, but there is no other, and this whole meditation is over the question of tone. By their tone are all things human either lost or saved. In these words, which his brother Henry might have written — did indeed write in both *The Sacred Fount* and *Roderick Hudson*, "I should know a great character when I see it" — we hear again the leading note, the characteristic tone, of the fastidious and exacting Jamesian mind.

The folly of the PhD Octopus lay in this lack of authenticity. With deep irony, James recounts the sad story of the brilliant Harvard graduate appointed to teach in a neighbouring college who turns out not to have a doctorate. His "sponsor" guarantees his merit, but that is not enough. He must write a thesis, "padded out in a certain way, and pass our formidable ordeals in subjects perhaps unrelated to his teaching". Only then could he "wipe out the stain and bring the college into proper relations with the world again".

Ever since James's day, the octopus has held American higher learning in its grip. The sham of a required "original" contribution to knowledge has used up vast amounts of mental energy in all concerned, brought unimaginable anguish to the young scholar and his family, wasted social resources in publishing, storing and cataloguing the produced and the very idea of scholarship and its demanding it under pressure and of specified bulk.

The author is university professor emeritus at Columbia. This article is adapted from his study of William James, published this spring by Harper & Row.

The resulting inflation is patent: a discovery worth a footnote becomes an article; articles are blown up into books; insignificant subjects are researched and non-subjects (e.g. abstract notions derived from reading poetry or fiction) are treated at length; the same lives, events and masterpieces are reshaped again and again under the arbitrary stencil of faddish criticism, history or psychology. Meanwhile, the standards applied to the research and the writing necessarily vary and, by Gresham's law, tend to decline, but all PhDs are equal. The holders are certified — which is indispensable when the practice of telling a good man when you see one has been abandoned.

The consequences may seem remote from society at large, but they are real. The intellectual life of the country is damaged by the diffusion of bad or pointless books: by the common distinction between written work that is genuine and that which is "academic"; by the alienation of whole publics — say, the readers of history or philosophy — through professional prose and ostentatious scorn for the layman. For the individual, as James apprehended, the PhD was the forerunner of the credentials society. "Other nations suffer terribly from the Mandarin disease. Are we doomed to suffer like the rest?"

The answer can be read in the tone of "resumes" and "vitas" that are the paper currency of social worth today. It is a fast-depreciating currency. Every applicant for any job requiring education is covered with labels of prestige like a globe-trotter's suitcase. The competition has got to the point where handbooks exist to teach what certificates and what previous posts are likely to impress and how to organize them into a work of convincing art. For the interviewer can hardly assess the diplomas acquired in good faith so as to "quality". He is reduced to judging the skill (or rather the savvy) with which the document has been compiled.

To the end of his life, James questioned the ways of higher education. He thought that college gave "glitter and flexibility" but that it did not make citizens wiser voters. He saw, too, that for most men and women the intellectual life as such has no appeal. He therefore, like Robert Hutchins, 40 years later, favoured a three-year undergraduate course leading to the BA. "There is a deep, by roots distinction between two sorts of students. The one is born for the theoretic life and is capable of pressing forward indefinitely into its subtleties and specialities. The other class of man may be intelligent, but they are not theoretical, and their interest in most subjects reaches its saturation point when the broader results have been reached". These broader results could be imparted in secondary schools if the time spent there were not being wasted as it is now. College would then offer a combined general and special preparation leading to the several professions.

Such a change in the educational system would get rid of many difficulties in the lives of the young as well as in the working of colleges and universities. For one, the tedious debate about "the need for liberal education" and the equally daunting plans for "giving" it, would be no question of specialist scholarship in the high school so that the chance to stretch and fill their minds before entering what is to them the real world. In these days, when one meets college graduates five or six years after their degree, the striking thing is how few traces of the "vaunted 'breadth' and 'depth' remain".

In this state of the higher learning in America, there is something bitterly comic in the over-rising cost of college and university fees. So far these have been met only by deeper remedies and falling enrolments. Perhaps at the point where it will keep out all but millionaires it is time to occur to someone that it is time to recognize the entire mode, purpose and content of higher education.

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Interfering with viruses

D. C. Burke considers the various uses of the antiviral drug interferon

Interferon was discovered more than 25 years ago in London by Isaacs and Lindenmann. Why, after all that time, has there recently been the sudden blaze of publicity over its use as an anticancer drug, and what are the prospects for its usefulness?

Interferon is a protein, or rather a family of proteins, which inhibit the multiplication of a number of animal viruses. That is, it acts like an antibiotic against viruses. It does this by protecting the cell from the effects of virus infections, rather by directly inactivating the virus, as antibody does. Right away it is realized that interferon might be clinically useful as an antibiotic against viruses.

Viruses, unlike bacteria, multiply inside living cells and are parasitic upon them, so that it is very difficult to stop the virus from growing without killing the cell.

A collaboration was set up in 1960 between the Medical Research Council, ICI, the Wellcome Laboratories and Glaxo Laboratories to develop this new approach. It was shown in 1962 that interferon was a successful antiviral drug in human volunteers, in a trial using vaccinia virus in the skin, used then to prevent us from contracting smallpox. The sights were then set on a trial against the common cold and influenza — real infections as opposed to the rather artificial circumstances of the first trial.

However, for a number of reasons, it turned out to be very hard to use interferon in this way. First, interferon is only normally active in cells of the species in which it is made. This meant that methods for producing interferon in human cells had to be worked out. Second, the interferon had to be purified free from any viruses or toxic materials before use. Third, because the interferon was to be sprayed up the nose, where so much is wasted, rather than injected into a small site in the skin, much more interferon was needed.

All these problems were ultimately solved by the use of human lymphoblastoid cells by the Wellcome Laboratories in England using large tanks (4,000 litres) of human cells, which are grown in suspension culture. These cells are then treated with virus in a batch process to release interferon which is then highly purified before use. Since this material is made in cells derived originally from a patient with cancer, the interferon has not been cleared for use in antiviral trials but only for the anticancer trials, and it is now being used for a number of trials in Britain, Canada and Japan.

Sufficient human interferon had been made by 1973 to run a small trial against the common cold virus. The interferon was sprayed up the noses of human volunteers several times a day for two days before virus infection. The trial showed that the interferon did prevent some colds, but some of the treated patients still showed cold symptoms, so that they were not all protected, and there was no more interferon. Other trials against virus infections also showed some effect — against viral hepatitis, herpes zoster, and cytomegalovirus infections — but the results were not encouraging enough for interferon to be used generally in patients.

About this time interferon began to be used against cancer. Dr Ion Gresser, in Paris, had shown that growth of tumours in mice. Even though some tumours can be caused by viruses, interferon was not acting here as an antiviral agent, but probably by stimulating the immune system.

Stimulated by Gresser's work, Dr Hans Strandberg in Stockholm started treating patients suffering from osteogenic sarcoma with human interferon. He chose this condition because, although rare, there was no other effective treatment available at that time, apart from surgery and radiation, and the patients did not live very long, even with treatment. Patients were injected with interfer-

on for one month, then three times a week for a further 17 months. The treated patients were compared with a control group taken from the hospital records, and almost immediately it was obvious that the interferon-treated patients were doing better than the control group. This result caused world-wide interest and led to a large number of trials in Europe, the United States and Japan.

However there are two problems with the Stockholm trials. The first is that the course of the disease appears to be changing — becoming less severe, so that when the clinical progress of the interferon-treated patients was compared with control groups elsewhere in Sweden or in the United States — the difference was much less.

The second was one that is common to many clinical trials today, and that is that with a small group of patients (say up to 50) it is difficult to be sure that any difference seen between the treated and untreated groups is not due to chance. This is because of the variability of the human response coupled with the rather small improvements that we now see in clinical trials. So the outcome of the Swedish trial remains in some doubt.

Interferon was then tried against a large number of cancers with rather variable results. Against some cancers (eg lung cancer) there was clearly no effect, but against others (eg some lymphomas and breast cancer) about 20 per cent of the treated patients showed some response. This means that interferon treatment is often no better than other current treatments, but if we could find out why those 20 per cent responded and others did not, then interferon treatment would be much more useful.

These trials have generated a demand for substantial amounts of interferon, but this problem has now been solved by the application of new technology. The first generation method for making interferon has already been described; using white blood cells treated with a virus. This material after partial purification in Helsinki, was used in Stockholm, elsewhere in Europe and in the United States for many of the early trials.

Over the last three to four years it has been supplemented by the second generation method. Interferon is made in human lymphoblastoid cells by the Wellcome Laboratories in England using large tanks (4,000 litres) of human cells, which are grown in suspension culture. These cells are then treated with virus in a batch process to release interferon which is then highly purified before use. Since this material is made in cells derived originally from a patient with cancer, the interferon has not been cleared for use in antiviral trials but only for the anticancer trials, and it is now being used for a number of trials in Britain, Canada and Japan.

The third generation method depends on genetic engineering: first inserting the interferon gene into bacteria, and then persuading the bacteria to make interferon. This process has now been successfully carried out in a number of centres. All human cells contain the interferon genes, but these genes are normally inactive, not making any interferon. When human cells are treated with viruses or double-strand ribonucleic acid, then the genes are activated; they make interferon messenger RNA which in turn is translated to make interferon.

However there are several different forms of human interferon: the material made when white blood cells are treated with viruses is mainly interferon α . The material made when human cells are treated with double-strand ribonucleic acid is interferon β , and the material made when cells of the human immune system are treated with mitogens (substances that make cells divide) or an appropriate antigen is interferon γ . Most of the clinical trials have been carried out with human interferon α , a few with interferon β , and trials with interferon γ are just starting. We don't understand why these different genes exist — it looks as if the interferon α and β genes are derived from a common ancestor but the interferon γ gene is quite different.

As an additional complication, there are a number of genes, all differing slightly from each other, and the human interferon α made by white cells or lymphoblastoid cells is actually a mixture of at least eight proteins. This complexity obviously made the cloning into bacteria more difficult.

All the successful cloning groups have used the same strategy. Cells producing interferon contain a mixture of messenger RNA molecules, a different one for each different protein that is made, and the interferon messenger RNA makes up only 0.1–1 per cent of the total amount of messenger RNA. The mixture of messenger RNAs is turned, by use of the appropriate enzyme in DNA and the DNA is inserted into a small circular piece of DNA, called a plasmid.

The plasmids, each derived from a different messenger RNA, are then inserted into bacteria, to give a large number of individual bacteria carrying different pieces of DNA. Each in turn is grown up to yield a large number of identical bacteria derived from a single bacterium, each containing one of the DNA copies from the original messenger RNA mixture. This process has separated into individual bacteria and increased the amount, by growth of the bacteria, of each DNA copy of the messenger RNA.

All that is now required is to test each sample of bacteria for the presence of an interferon gene, by a rather complex process that depends upon the ability of a particular gene to bind to the messenger RNA molecule that is derived from it. In this way, the genes for human interferon α , β and γ have been cloned into bacteria and the precise sequence of nucleotides in the gene determined. Once the sequence of each gene is known, then the amino acid sequence can be derived from it by use of the genetic code, and thus the structure of each protein determined.

The next step is to persuade the bacteria to use the human interferon gene they contain — by making interferon in the bacteria. The technical details are outside the scope of this article, but the problems of production in bacteria and purification of human interferon α and β have been solved by several drug companies — Schering-Plough/BioGen in Europe, by Roche/Greiner in the US and by several Japanese companies.

Interferon α made by gene cloning is now being used in clinical trials in the United States, Britain and Japan but it will be some time before we know how effective it is. It is likely there is an upper limit to the amount of interferon that can be used because it causes some basically harmless and reversible physiological effects (eg headache and fever) and also some local inflammation after injection. What we need to determine is what cancer is most sensitive to interferon and how best to administer the interferon.

Cloned interferon α has also been used recently in a new series of trials against the common cold virus at Salisbury. Here the side effects are much less of a problem since the interferon is sprayed up the nose rather than injected into the body. The trials so far have shown it to be effective; 42 people have received either cloned interferon α or purified interferon α made in human cells, and have then been infected with common cold virus. About 20 of these would normally have been expected to develop a cold; in fact none have.

The trials will continue against influenza virus and respiratory syncytial virus, two major causes of upper respiratory infections, to determine whether interferon is effective against them or not. It is unlikely that interferon will be able to cure a cold or influenza once it has been started, but it might well be useful given before an infection — say in an epidemic. It is too soon to say definitely, but possibly interferon will fulfil its promise as an antiviral agent — using cloned interferon developed as an antitumour agent.

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Tapping the graduate bank

In the second of two articles Ray Footman continues his look at private fund-raising in American colleges

According to James L. Fisher, president of the Washington-based Council for the Advancement and Support of Education, voluntary support for higher education in the United States reached \$4,230m in 1980/81 with a record level of giving by individuals, alumni and non-alumni, contributing \$2,060m of this total.

This is less surprising when one studies the resources and effort that universities in the United States put into their development, or fund-raising activities. Stanford at Palo Alto in California, with 13,000 current students and 130,000 alumni, employs more than 160 staff in development related work and currently raises about \$80m per year — and approaching one quarter of its operating budget — from private sources, divided approximately as follows: \$20m from corporations; \$20m from foundations; \$11m from wills and bequests; \$9m from living individuals; and \$20m from major gifts. While Stanford is regarded as something of a master of the art of private fund-raising, substantial staff investment figures could be quoted for other major private universities, where the general pattern of fund-raising seems increasingly to centre on a continual annual fund-raising programme, with periodic four or five-year special efforts also being mounted.

And if fund-raising programmes at this level can hardly be regarded as typical of the average publicly-funded North American university, similar efforts are being made by them to supplement state funding from a variety of private sources. The University of North Carolina at Chapel Hill, the oldest state university in the United States, currently having some 22,000 students, realizes about \$19m per annum in gifts, grants and bequests (nearly \$8m from alumni; \$24m from corporations; nearly \$44m from foundations; some \$12m from bequests; and, approaching \$32m from other donors and a central development office of 22 staff).

Whatever the scale of the activity, the message is that you have to invest money to generate money and that an effective fund-raising programme takes time to build up. One development officer suggested that, for every \$100 you hoped to raise, you were likely to have to spend \$20 in the early stages, around \$10 when you had built up an established operation and that it might be feasible to get this down to \$7 or \$8 if you were operating very efficiently. In line with this approach, the employment of highly professional staff with special fund-raising skills is regarded as an essential.

Fund-raising among alumni, or graduates, is seen to depend in good measure on the institution's past success in encouraging the identification, communications, services and records systems to which I referred last week, although there is a divergence of view and practice between universities in the extent to which alumni associations should be directly involved in soliciting contributions. Some alumni directors prefer to establish a framework in which it is clear that communications to graduates are not invariably accompanied by requests for financial support; others operate on the assumption that graduates in fact expect to be solicited in this way and that a rigid divorce between friend and fund-raising functions is not realistic. Even in those universities, however, where alumni associations are principally information and social organizations, attention is drawn to the need for close collaboration between their officers and professional development staff in, for example, the maintenance of records and coordination of communications.

The most common continuous form of fund raising among alumni is the "annual giving programme", where regular contributions are solicited from among graduates, in the first instance through mass mailings. McGill University, in Montreal, began its annual approach to alumni,

the "Alma Mater Fund" in 1948, when nearly 3,000 donors from almost 17,000 graduates gave some \$77,000. While the annual response rate has varied from an initial 17 per cent to a high of 45 per cent in the mid-1960s, in recent years it has held steady at around 25 per cent and currently yields a rising total of about \$1,896,000 (in 1981/82), with gifts averaging just over \$100 per contributing graduate (nearly \$20m in total since the programme began).

The mailing operation carried out by many universities for their annual giving approach is often a highly sophisticated one in terms of the mechanics, the thought which is given to the form of solicitation cards, and the arrangements made for acknowledging gifts at varying levels. Increasingly, fund-raising offices are using "phonathons", strategically placed within the mailing timetable.

While much effort is devoted among development staff to increasing the proportion of graduates who contribute to university funds through "annual giving", one of the most important processes is seen as identifying within that group the key few hundred who have a high giving potential, in whose case, as special individuals, means of approach may be employed. A number of means are used to encourage donations for among such groups and then to attempt to continue that pattern of giving.

Clearly the tax structure in North America is not irrelevant to either the scope or scale of graduate and other philanthropy towards university institutions, when one-off contributions to university funds can be set against tax liability. An additional stimulus is provided in North America by the matching gifts programme under which graduates may also encourage their own firms to match, dollar for dollar, (albeit qualifying for tax relief) any contribution they may make to their alma mater. Annual giving from among graduates may also be stimulated in some universities which have a highly developed class reunion system, where particular classes may vie with one another to establish record giving totals on the occasion of their major 25th or 50th reunions. At Harvard the last 25-year reunion raised more than \$2m.

In most institutions the principal aim of annual giving seems to be the raising of unearmarked funds which enable the university to apply them to current operating expenditure. Provision is often also made, however, in recognition that some graduates will have a particular allegiance to certain university activities or academic disciplines, for part of all of their gift to be designated to a specific or general area if they so wish. And while \$1m a year raised from alumni giving may not be a very high percentage of the total income of a major university like British Columbia at Vancouver, it does help to provide that vital margin.

Given the lack of a strong tradition of continuing graduate contact among most universities this side of the Atlantic, there is undoubtedly scope for improvement, both in terms of communication and in building up financial support programmes. This is not something, however, which in most cases is likely to be remedied either overnight or without pump-priming funds in the early years. Even acknowledging the differences in social and political attitudes between overseas and the North Americans and recognizing it would be mistaken to assume that patterns of activities established overseas can simply be transposed to a British environment, my own experience within the British university system and most recently, and briefly, of what applies in North America, leads me to the conclusion that we all ought to make greater efforts.

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BOOKS

The survival of the past

by W. H. Walsh

On History and Other Essays
by Michael Oakeshott
Blackwell, £12.00
ISBN 0 631 13114 0

The greater part of Professor Oakeshott's new book is taken up with discussion of the nature of history; this is the third time the author has addressed himself to this topic at length.

His first attempt was made as long as fifty years ago in *Experience and Its Modes*. Oakeshott there sought to investigate what he called "the general character of experience", i.e. to specify the properties that would be possessed by an experience which was intelligible through and through, and then to consider in the light of the results certain common ways of taking experience, with a view both to making their differences clear and to determining their ultimate tenability. History, science and "practices" were the candidates examined, and though each turned out to be a distinctive and irreducible way of thinking about the world, none was found to be more than a "mode" or "arrest" of experience; all fell short of philosophical truth. At the time the book was seen, not unreasonably, as a metaphysical essay in the Hegelian mode, comparable to Collingwood's early work *Speculum Mentis*. In fact its interest has proved to be quite different: it is not the metaphysics (on which Oakeshott has had no more to say) that continues to attract attention, but the detailed treatment of the particular "modes".

The chapter on history has deservedly been studied most. At the centre of it lay Oakeshott's insistence on the sharp difference between the past as conceived for purposes of practical life and the past as conceived in history proper. The practical past connects closely with our hopes and fears, our projects and our need to get on in the world; it is a past that can be said to be alive since it bears so evidently on the present. But the attitude of the true historian towards the past whose details it is his job to investigate is wholly different. The historical past is over and done with; it can neither console nor console us, but only await our inquiry. An object of this kind deserves neither our censure nor our praise, nor can its investigation afford us any lessons. Inquiry into it can only be disinterested: if we find out about it, it must be for its own sake.

History as delineated in this discussion turned out to have an austere purity which Oakeshott admitted was not always to be found in the writings of actual historians, who in his view were often seduced by ideas belonging properly to other modes of experience. The idea of cause, for instance. What we find in history books could well be a hybrid; the important thing, however, was to get the nature of true history clear. The conception of history sketched here has remained central in its author's thought; later discussions have not so much amended as lent it depth.

Another set of differences which concerned Oakeshott in *Experience and Its Modes* was that between history and science. The two were alike in their attitude to their object, but diverged in so far as history considered individual happenings where science dealt with instances. It was hence a mistake of principle to try to understand historical events by bringing them under general laws of the scientific type; it was a mistake, again, to borrow concepts from science with a view to elucidating particular historical episodes. Historical explanation must be wholly different from scientific explanation, a contention Oakeshott tried to make good by filling in details. These themes too have remained prominent in Oakeshott's later treatments of the subject.

More than twenty years after his first book Oakeshott produced a brilliant essay entitled "The Activity of being an Historian" in which he restated his main contentions about history without saying anything about its metaphysical status. The contrast between the practical and historical pasts was reiterated, its consequences being pointed up vividly in a long list of typical sentences and expressions which, Oakeshott said, could not be permitted in history proper. Many historians must have rubbed their eyes on seeing the list, since it contained not only phrases like "the evolution of Parliament" and "the development of industrial society in Great Britain", but also "The Pope's intervention changed the course of events" and "The effect of the Boer War was to make clear the necessity for radical reform in the British Army". Oakeshott argued that to attempt when writing history to treat what happened as a series of projects, long or short-term, successful or the reverse, was to lapse into the practical attitude, which was wholly foreign to history. But he did not explain at this stage how if that were so history could be possible at all. Aristotle said that history was what Alcibiades did and suffered; what Alcibiades did was to enter on a series of projects, mention of which seems unavoidable if we are to give an account of his times. So though we can forego indulging in moral approval or disapproval of such an individual, and may agree that it is not our business as historians to draw any lesson from study of his career, we cannot avoid all practical ways of thought when we turn our attention to him. We shall need in such a history to speak of actions and their results, of men in their capacity as agents, making plans, meeting opposition and trying to counter it, succeeding, failing. And that seems to make the Pope's intervention admissible after all.

It is at this point that Oakeshott takes up the discussion in his new book. His point of departure is once more the opposition of the two sorts of past, which he seeks to illuminate further by exploring the relations each has to its own distinctive kind of present. The present of the practical man is one which essentially looks to the future; material of any kind is relevant to it as it bears on what is to be done or avoided. It follows that the past for practice is not treated as a past at all; its heroes or villains are as if alive now, or as if they were purely mythological. For a true past we need to turn to history proper, which begins from a particular present and is concerned with it only for what it reveals of former happenings and states of affairs.

The historian's present is a series of utterances or productions of (mostly) long-dead human beings; what he does is treat these as "circumstantial evidence of a past which has not survived". It is not his business, as Dilthey and Collingwood claimed, to argue from "expressions" to the thought to which they gave body; he is not directly concerned with men's purposes and actions at all, but rather with the course of events that came about without anyone intending it, as a result of the "engagements" of different individuals. "Performances" or "performative utterances" bear witness to what happened, but are not to be seen as versions of what happened, even when they take the form of direct reports. They are useful not for what they may explicitly claim, but for what they reveal or let slip. They could not be useful as reports since the historian has to determine what truly happened, and this is something no contemporary could have witnessed. It is, the inference seems to be, only in the context of the historian's thought, as "what the evidence obliges us to believe", to use an earlier phrase of Oakeshott's, that "historical facts" have no substantial being of their own, if this is correct, something Oakeshott has retained from his

Idealist past. But it is clear that in other respects he dissociates himself entirely from the main commonplaces of Idealist philosophy of history, certainly from the emphasis on action and thought and perhaps even from the claim that historical reflection involves a special kind of understanding.

Can we believe this account? It depends in the first place on what Oakeshott means by "historical events". It emerges at one stage that no sharp line is being drawn between events and situations; attention to "survivals" of the kind described enables us first to infer something about past conditions which obtained in the past and then to establish the occurrence of certain changes in those conditions. What a situation is - whether it involves or could involve persons in an active capacity - is here left obscure. But the crucial question to ask is whether "event" in Oakeshott's vocabulary could also cover action. The answer seems to be that it could not. History, we learn, is concerned with "the unintended eventual by-products" of "transactional engagements" which are not themselves "assignable performances"; action and agents come into it, but only peripherally, as precipitants of what came about. To try to understand history in terms of the purposes, motives and intentions of particular individuals is accordingly a mistake.

The claim is clear and challenging, but for all that difficult to accept. When the historian comes to write history in this difficult mode, will he mention the "transactional engagements" of which the events he wants to get at are the precipitate? Will he not have to mention them if he is to give anything like a full account? And will not a reference to them involve undertaking some estimate of their effect, i.e. of the contribution the different parties made to the outcome, an estimate required not for extraneous practical purposes, but for the sake of historical truth? Or is it that we know in advance that no such agent can succeed in achieving anything of what he intended, that everything in history comes about inadvertently? To maintain that would surely be an extreme paradox. Oakeshott is convinced that to think of events as resulting from vast impersonal forces is quite unhistorical. But it is not equally unhistorical to deny that they are ever the direct product of human wills?

What is most puzzling about Oakeshottian history is its lack of human interest. The comment would not worry Oakeshott, since from the first he has insisted on the distinctness of the different modes. Interest is a concept belonging to practice; it has nothing to do with science or history or for that matter art. Yet the pursuit of knowledge itself, including the pursuit of knowledge for its own sake, is a practical activity; those who engage in it need a motive for devoting themselves to the task. Could sheer curiosity or sheer love of knowledge provide such a motive? It seems altogether more plausible to say that historical studies are sustained by an abiding interest in their results, in so far as these bear on the fortunes and vicissitudes of mankind. Curiosity and the love of knowledge come into it, but it is curiously about the projects, successes and failures of men like ourselves. The fact that what we are occupied with moves us indeed, moves us deeply, need not prevent our investigating it impartially. If we try we can abstract from its apparent relevance to ourselves and consider it as an independent object. Oakeshott is quite right to insist that this is the historical attitude proper. But he is wrong to add that this is all the historian can properly be concerned with. After I have established such truth about the past as I can, can I use it for many purposes - to reflect on the triumphs and failures of the human species, to pronounce on what it is like to be alive in past times, to find out something about



Michael Oakeshott

myself and the age in which I live.

As well as considering the historical activity of recovering or rather discovering the true course of events, Oakeshott has much to say about their connections. His remarks on this head follow naturally on the discussions of historical causation to be found in his earlier work, especially *Experience and Its Modes*. There he declared roundly that the concept of cause was out of place in history; here he acknowledges that the word "cause" is an ineliminable part of the historian's vocabulary, but still refuses to take it too seriously.

Historians in practice can make no use of either practical or scientific causes, nor, since for them a cause is something temporally separated from its effect, can they invoke any Aristotelian concept of cause. In general, "the word 'cause' in historical discourse is commonly a loose, insignificant expression". Oakeshott does not propose to transform it into something better. But he does emphasize the historian's concern with what he calls "significant" relationships between events and tries to show how, in establishing such a relationship, we start not with an event which is fully understood and of which we seek the causal antecedents, but rather from a position in which full understanding is still to seek. By picking out an element in a preceding situation and relating our object of inquiry to it, we hope to throw some light on the object itself. The relationship is "contingent", i.e. circumstantial, and apparently consists in the imparting of "differences".

There is a good deal here which requires further clarification: talk about an historical event being "a conjunction of accessories which are the difference they made in a convergence of differences which compose a circumstantial historical identity" does not help very much.

Yet though Oakeshott in the final part of his study falls below his customary lucidity (the remarks about continuity in history near the end are also rather obscure), it is clear that here too he is full of interesting and unusual ideas. It is safe to predict that these essays, along with his earlier writings on the subject, will be read by philosophers and theorists of history for many years to come. They are the product of a powerful, subtle and independent thinker, a writer of charm and elegance, one who, as his incidental references show, is a man of wide culture. Conservative in their general effect - Maitland remains Oakeshott's nearest ideal historian, and there is only a single reference to "so-called cliometrics" - they are nevertheless radical in detail. They constitute what is far and away the most stimulating, if not always the most persuasive, treatment of their subject in English.

It should be added that the book contains not only this extended study of "the logic of historical inquiry" (Oakeshott's own term), but also a lively and uncompromising essay on the rule of law, notable for the strictness with which it circumscribes the proper use of that term and then for good measure a modern version of the story of the Tower of Babel, already given wider circulation by being printed in part in *The Times*. Disappointingly, the author does not tell us whether this is to be taken as a history, a work of art or a contribution to practical discourse. But, like the rest of the book, it is a pleasure to read in any case.

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BOOKS

Zimbabwe drama

Under the Skin: the death of white Rhodesia
by David Cautle
Allen Lane, £14.95
ISBN 0 7139 1357 6

Tuesday, March 4, 1980 marked the end of the world for most white Rhodesians. The unthinkable had happened: Robert Mugabe, the Marxist terrorist, had swept to victory with an absolute majority of seats, Nkomo's support was virtually confined to Matabeleland, Muzorewa had been trounced and Sithole confined to political oblivion.

At the end of a long, bloody and bitter struggle, the white military forces could boast that they had not lost a single battle, but they had certainly lost the hearts and minds of the majority of Africans to "the boys in the bush". Most whites, and perhaps more crucially the South African and British governments, were caught off-guard, for they never expected Zanu-Patriotic Front to gain an outright political victory. To some extent Rhodesian whites were victims of their own war propaganda, but, more fundamentally, they were the products of a colonial culture that regarded it as self-evident that Africans were incapable of emulating the "civilized" political behaviour of the white man.

It is the nature of this mentality that David Cautle sets out to explore in his brilliant and tragic study of the last few years of the guerrilla war. The book consists of five sections each representing a single year during the period 1976 to 1980. Interviews with farmers, housewives, politicians, missionaries and soldiers are interspersed with a narrative of the war itself. We are constantly reminded of the ever-mounting toll of death and destruction as the war of attrition grinds on. Although Cautle's sympathies lie unequivocally with the guerrillas, he is far too perceptive an observer to see the issues simply in terms of black and white. Atrocities are committed by both sides: the carnage in the Zambwa camps at Nyadzanga and Chimoloi; the Elton massacre of missionaries and their children; the destruction of the Huwani and the Umvoti by surface-to-air missiles, being some of the more grisly episodes in a savage civil war.

It is in the sly portraits of ordinary individuals, and the authentic reporting of their rationalizations, that the author's skill as a newspaper correspondent and as a novelist are most evident. A wealthy tobacco farmer, convinced himself that he cannot afford to pay his African workers wages above the poverty line. The reasons are set out without comment, but at the end of this litany of excuses, Cautle casually mentions that the farmer's accountant has just advised him to buy a private aeroplane. We are left to draw our own conclusions. There are the familiar portraits of the white housewives, forever grumbling about their lazy and stupid servants, but never quite managing to dispense with their services. As Cautle observes, these women are impossible to parody - "For decades housewives have been fascinated by memoirs, but memoirs and their daughters don't seem to read the novels and their performance remains unadorned by a modicum of self-awareness."

However, it is not simply unthinking white racism that falls victim to Cautle's satirical pen; missionaries, white liberals, politicians of all colours and persuasions, even foreign correspondents are exposed for their self-serving actions and hypocrisy. Only Garfield Todd, his wife Grace, and daughter Judith (to whom the book is dedicated) emerge virtually unscathed. Grim though the story is, the narrative does not ignore individual acts of courage and heroism, nor does it neglect moments of humour and farce. There is the odd preamble of "women in flowered dresses carrying sub-machine guns to the toilet", and a whole gallery of comic and absurd characters. Sister

Janice McLaughlin, the American-born missionary who was deported in 1977 for sympathizing with the insurgents, is captured in the following thumbnail sketch: "a swinging revolutionary nun with all the fervour of a college cheerleader - Black Africa was her team."

Rhodesian Front politicians get the expected treatment, but so too do most of the African political leaders. Muzorewa, "the Bish", is dismissed as a "clown". Sithole is a flagrant opportunist, and there is an instructive comparison between the personalities of that "incongruous pair", Nkomo and Mugabe. It is this final subject, so crucial for subsequent events, that one wishes the author had explored in greater detail, although he would probably argue that this has more to do with the future of Zimbabwe than the death of white Rhodesia. This is not a scholarly history of the independence struggle, but an excellent journalistic account of the war that captures the "feel" of the drama and penetrates the minds of many of the actors involved in it. It shares something of the quality of Toqueville's writings on the political upheavals in nineteenth-century France. However, it is the Toqueville of the *Souvenirs*, the day-to-day account of revolution in the streets of Paris, rather than the *Ancien Régime et la Révolution*, the meticulously-researched analysis of the origins of revolutionary change, that this book more nearly resembles.

It would be tempting to suggest that *Under the Skin* should be compulsory reading for all whites living south of the Limpopo. But if this account of the final years of Rhodesia is at all accurate it is unlikely that many whites in South Africa would ever appreciate its real message. This is because, to paraphrase the author, they "live in a world they know well, but understand not at all".

John Stone

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Maurras under fire

Nationalism, Positivism and Catholicism: the politics of Charles Maurras and French Catholics, 1890-1914
by Michael Sutton
Cambridge University Press, £25.00
ISBN 0 521 22868 9

This intelligent and agreeably-written book is not what its subtitle might lead most readers to expect. It is about ideas rather than politics, and is primarily concerned with the controversy between Charles Maurras and two Catholic philosophers, Maurice Blondel and Lucien Laberthonnière.

Politics are present as an important influence on the course of the debate, in that Maurras successfully exploited the Dreyfus crisis and its anticlerical aftermath as a means of obtaining allies and adherents among the Catholic clergy and committed laity. But the main protagonists are concepts rather than groups, and the battle is fought amid the dark-green austerity of desk-top and study lamp. This is not the world of Maurras, the day-to-day journalist, pouring out vituperation on the Jews and the Republic, even if this latter ego is always at hand to provide the cutting edge to his incisive rejoinders.

However repugnant one may find Maurras's premises and conclusions, it is hard not to feel a sneaking admiration for the remorseless logic that links them - and for the pungent aphorisms in which they are couched. For economy of expression it would be difficult to improve on the following: "The more I analyse myself, the less I believe in freedom. But the more I act, the less I question it. In accepting the ordinary human lot; I fall again under the yoke of illusion; - and psychology is no more than the science of illusion." Maurras, as an idiosyncratic positivist, made much of the fact that in

1857 "Comte delegated one of his disciples... to negotiate... an alliance between Positivism and the Rule of the Jesuits against Deism. Protestantism and other forms of modern anarchy... to cite Maurras's own account, Maurras saw himself as figuratively renewing the offer when he sought to enlist the Church in his campaign to establish a social discipline, enshrined in the nation, and opposed to what he saw as the destructive individualism of Protestantism, Judaism and Romanticism. It was the hierarchical authority of the Church that had preserved the precious principles of the Graeco-Roman world and had ensured "that the disciplined people of the south of Europe have hardly known these turbulent Oriental writings [scripture] other than when... warned by the Church".

Blondel and Laberthonnière turned Catholics against the dangers of accepting Maurras as an ally against an anticlerical government, and demonstrated the gulf that separated Maurras's thought from that of the Church. Dr Sutton's main purpose is to lay bare the intellectual foundations of this debate and show the influence of contemporary events on the way churchmen responded to this warning in the years before the First World War. The ecclesiastical politics that led to the eventual papal condemnation of Action Française lie outside his brief, although he does indicate their main outline in the concluding sections of the book. It is hard to do justice here to the person and thoroughness with which he analyses these issues, several of which involve an extended consideration of Church thinkers of earlier centuries. A matter for serious regret is the omission of a bibliography - which imposes on the reader the time-consuming task of working backwards through pages of copious notes every time he wishes to locate a source's full title or date of publication. This is all the more surprising in a book that treats a fairly circumscribed subject in such detail and is not afraid to repeat its main points at some length.

In these days of cautious publishing, it is refreshing to read a book which presents a debate of this kind in all its fullness and without seeking to force a contemporary "relevance". It is the type of publication that one used to associate with the older firms of the *sixième arrondissement*; and for all the English elegance of its style and presentation, its character nostalgically evokes the rasp of the paper-knife and the distant tolling of St. Supples.

Maurice Larkin

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Looking good

Modern Germany: society, economy and politics in the twentieth century by V. R. Berghahn
Cambridge University Press, £20.00 and £6.95
ISBN 0 521 23185 X and 29859 8

Fifty years after Hitler's accession to power, it is not surprising that people are asking whether history could repeat itself: might Germany relapse into extremism in the face of present socio-economic difficulties? Professor Berghahn's excellent survey of German society, politics and economics in the twentieth century is distinctly encouraging on this point: he believes that the political culture of Germany - both East and West - has changed so profoundly since the Second World War that, for all their failings, these two societies should be able to weather any foreseeable social or economic crisis. As far as West Germany is concerned, Berghahn's conclusions about the extent of social and political change are much more positive than were Ralf Dahrendorf's twenty years ago in *Society and Democracy in Germany*. In the first chapter Berghahn endorses Dahrendorf's thesis that Wilhelmine Germany's social and political systems were destabilized

from "below" as a result of the very rapid industrialization and demographic growth between 1870 and 1914. The stronger the Social Democrats (SPD) became, the more the old Prussian alliance between Junkers, industrialists and (increasingly) middle classes felt itself threatened. This alliance was quite unwilling to concede any real political power to the SPD, and the SPD had become the largest party in the Reichstag by 1912, the choice seemed to be between civil war at home or a quick "scapegoat" war abroad which would consolidate the power of the traditional elites, at least for the foreseeable future. Thus, "by 1913 the question of civil war and foreign war had indeed become two sides of the same coin in the minds of the Kaiser and his advisers, and it is virtually impossible to decide which obsessed them more" (page 36).

Well, of course, the Great War destroyed, instead of consolidating, the Kaiser's system. Berghahn lays to rest once again, but quite rightly, the old myth that the home front betrayed the army. On the contrary it was the military-dominated government which put such impossible strains on Germany that both fronts collapsed. However, they collapsed in such a way that the soldiers were able to pass the buck on to the liberal-democratic politicians of the Weimar Republic, who then had to accept responsibility for what, with the hindsight of history, was clearly a very unwise peace treaty. The Right never accepted the Versailles *Diktat*, and as a result Weimar was "undermined" from the beginning. Thus, as Berghahn emphasizes, foreign policy in the interwar years, as in the pre-war years, was inextricably bound up with domestic policy. Hitler was, of course, able to exploit the economic crisis of 1929-32, but the underlying reason for the Nazi *Machtergreifung* was, he concludes, sociopolitical rather than economic. Widespread resentment against the Republic from among almost all classes except the working class (which unfortunately

was divided between Socialists and Communists) was what undermined Weimar. Something like one third of the members of the Nazi Party were working class, yet the industrial working class, even at the crisis elections of 1932 and 1933, was never seduced en masse by the NSDAP.

This conclusion is significant for postwar Germany. For if the working classes rejected Nazism in the severe economic crisis of 1933, it seems unlikely that they would fall for panaceas in any recession of today when governments have at least become much more sophisticated in alleviating the hardships of unemployment.

The very considerable economic success of both Germanies (particularly West) is of course well known, and has undoubtedly contributed to regime stability. But also of great importance, as Berghahn emphasizes, was the *Öspolklich* of a decade ago. For the various Eastern Treaties of that period indicated that "scapegoat" foreign policy (so important before the two World Wars) had finally been abandoned. And the willingness of the Germans to accept that a severe price had to be paid for Hitler, and that foreign policy "dreams" had to be abandoned, was evidence of relatively stable and integrated societies on both sides of the Iron Curtain. The "German problem" may not have been finally resolved, but it no longer seems to be potentially explosive. Profound changes in social and political attitudes, and an acceptance of past and present realities, are at the heart of this more promising situation.

Berghahn discusses Germany's political and social changes of the twentieth century with great skill and literacy in a book which can be recommended without reservation.

R. E. M. Irving

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BOOKS

The poet's voice

George Herbert: the critical heritage edited by C. A. Patrides Routledge & Kegan Paul, £25.00 ISBN 0 7100 9240 7 Henry Vaughan: the unfolding vision by Jonathan F. S. Post Princeton University Press, £16.80 ISBN 0 691 06527 6 Costly Monuments: representations of the self in George Herbert's poetry by Barbara Losh Hurman Harvard University Press, £12.25 ISBN 0 674 17465 8

The Critical Heritage Series adds George Herbert to its now substantial list, judiciously edited by C. A. Patrides. Herbert is a particularly, even uniquely, interesting subject for this kind of exercise, partly because of the many fluctuations in his poetic reputation and partly because of his special status, reflected in Isaac Walton's hagiography (reprinted here in full), as pious divine.

The collection, representing some 75 authors, provides a comprehensive, useful and fascinating survey of the varied responses to Herbert. Patrides's introduction, a masterly summary and guide through the material offered, tells the story of Herbert's critical heritage with such lucidity and wealth of annotation (148 full footnotes) as to be in danger of rendering redundant the texts that follow. Appendices contain several seventeenth-century musical settings of Herbert's lyrics, and some examples of Wesleyan and other adaptations of Herbert's "Verdure".

The vast majority of the extracts are in prose (there are some commendatory verses) and it would seem that Patrides is safe enough in his claim that Walton's *Life* is "the one literary masterpiece within the canon of Herbert's critical fortunes". Yet one of the most crucial and interesting aspects of Herbert's heritage, the relationship between Herbert and Henry Vaughan, also generative of literary masterpieces, proves impossible to indicate in such a format. Since Vaughan's poetry cannot be quoted at length, the best that can be done is to indicate the situation and include an extract from the preface to *Silken Scintillations*. Modern criticism has vindicated Vaughan (just as it has, in a sense, rescued Herbert), and the relationship between them forms a large part of Jonathan Post's fine study. It underscores the importance of Herbert to Vaughan, but amply demonstrates how though "Herbert might have been the catalyst in Vaughan's poetic career... as a pivotal force, he shaped rather than overwhelmed or displaced the Welsh poet's creative energies".

Impressively deploying the old-fashioned methods of historical scholarship and internal criticism, Post explores the poetics as well as the biography of Vaughan's conversion, and considers how Vaughan, in order to "match" his master, incorporated into his work the figure of the regenerative poet who was also a self-confessed successor to Herbert in a Church that had been driven underground. The final section on *Silken Scintillations* is the principal concern of the book, but it also reassesses Vaughan's entire literary career. The study is critically acute, historically and circumstantially detailed (one is made very aware of Vaughan's own time and place), and draws on an impressive knowledge of seventeenth-century poetics. It is a rewarding book which, without making extravagant claims, everywhere enhances its subject.

Barbara Hurman's *Costly Monuments* takes its title from George Herbert Palmer's devotional, multi-volume edition of Herbert in 1905. In character, the book is polemical; critically, it is the engrossed application of an insight: that the impulse towards self-representation in Her-



George Herbert

bert is strong but problematic, and that it is not strictly the self which is projected but only that part of the self that can be made manifest in writing. Self-representation is offered but is thwarted or re-designed in various ways, poems often representing the self in the very process of dismantling those representations.

For instance, the speaker in "The Collar" offers a retrospective story and then denies his identity with it at the end; "Misericordia" tells a story, but

French Literary Theory Today: a reader edited by Tzvetan Todorov Cambridge University Press, £19.50 and £5.95 ISBN 0 521 23036 5 and 29777 X Theorist of the Symbol by Tzvetan Todorov translated by Catherine Porter Blackwell, £15.00 ISBN 0 631 20511 5

Tzvetan Todorov is a leading French literary theorist, working out of the Centre National de la Recherche Scientifique in Paris. The author of nearly a dozen critical works, he is best known to the English speaking world through the translations of his *Poétique de la prose* and *Introduction à la littérature fantastique*. In his introduction to *French Literary Theory Today* Todorov provides a clear account of the assumptions governing the kind of research which goes on under the name "literary theory" or "poetics". The domain of poetics is constituted by three kinds of choice, and develops from three types of opposition. First, poetics is opposed to interpretation or criticism, which is concerned with individual works of literature. The object of poetics is the general laws which govern the functioning of literature. Secondly, however, by literature is meant only the verbal structures of the literary text, or discourse, apart from the process by which it is produced or received. Finally, the object of poetics is constituted by literary discourse, as opposed to other types of discourse. Poetics, then, is a structuralist inspired project to construct a value-free science of literature.

All of the contributors to Todorov's anthology hold to something like this account of poetics. The reader is intended as a sampler; as such it does not pretend to either thematic unity or completeness. It presents a useful cross-section of the kind of poetics theory produced in France between 1965 and 1978, with contributions from nearly all the leading practitioners. Particularly welcome are the translations of Barthes's "The reality effect", Jean Cohen's "A theory of the figure", and Philippe Lejeune's "The autobiographical contract".

Set against the background of contemporary poetics, *Theorist of the Symbol* looks to be something of a departure since it is an historical and critical essay which, as the plural in-

the author does not realize until the conclusion that he is its subject; the voice in "The Reprisal" claims it has no tale to tell and then disclaims the disclaimer; the "Jordan" poems make use of a language they also reject; or there are typological poems which rewrite personal stories as biblical stories: "the story of others rather than the story of the self".

Drawing on recent theoretical work diagnosing our own loss of the subject and the instability of all representation and narration (Foucault, Said, Arendt and Benjamin weave through the text), Harman may make us aware of the odd congruence between the problems she locates in Herbert's poetry and contemporary theory. But we are also conscious of a repetitious tenacity, even stridency, insisting that it really is there, and isn't just being made up by the clever critic. The study, for all the pleasure of discovery it is eager to offer (and at times delivers), also generates a disturbing uncertainty about what, or who, the book is for.

Oddly, there is no mention of A. D. Nuttall's study *Overheard by God*, very relevant one would have thought, to what Harman is arguing, particularly on the paradoxical competition evident in Herbert's poetry between personal writing and divine appropriation.

R. D. Bedford

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Where rhetoric ends

French Literary Theory Today: a reader edited by Tzvetan Todorov Cambridge University Press, £19.50 and £5.95 ISBN 0 521 23036 5 and 29777 X Theorist of the Symbol by Tzvetan Todorov translated by Catherine Porter Blackwell, £15.00 ISBN 0 631 20511 5

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Set against the background of contemporary poetics, *Theorist of the Symbol* looks to be something of a departure since it is an historical and critical essay which, as the plural in-

its title indicates, does not attempt to produce a theory which would explain the laws governing symbolic phenomena. The need for a departure from the orthodox poetic programme is something demanded by symbolic phenomena themselves since they are not restrictedly literary in character. Today, the problem raised by symbolism is studied in psychoanalytic theory, anthropology, and linguistics as well as by literary theory. It is not surprising, then, that Todorov thinks the third defining feature of poetics, viz. that its object is not irrelevant, and that he takes his object of concern to be over-determined or deviant symbolism. Tracing the restriction of symbolism to literature and then tracking down its current dispersion in non-literary disciplines forms a central part of the story Todorov is offering.

As a first approximation, one might hazard that the project of *Theories* is to delimit the boundaries, and thus the domain, of the symbolic by means of a critical cataloguing of the oppositions which have historically and theoretically defined it.

Theorist's scope is enormous, and thus one can only hint at its arguments through a summary of its contents. Rhetoric, an account of the birth of semiotics in Augustin's *Christian Doctrine*, according to Todorov the first work to locate rhetoric within a general theory of the sign, chapters two to five provide an extended discussion of the history and theories of classical rhetoric. Rhetoric, of course, began as an art of persuasion; it concerned not utterances as such, but speech acts, and thus eloquence as effective speech. Efficacious speech, however, only has a point in a democracy. As democracy gives way to monarchy in the Roman world, so the meaning of rhetoric alters as the best speech comes to be the one judged beautiful. From being a study of the means to certain ends, rhetoric becomes equated with the study of the "form", as opposed to the matter or content, of a discourse. Among the Romans a discourse which could be appreciated for its form alone was what we today call literature. This ground was laid for rhetoric becoming a study of tropes and figures. Rhetoric begins to end with the rise of the bourgeoisie and thus the collapse of a worldview which possessed absolute norms and universal values. Rhetoric is no longer possible in a world that takes "the plurality of norms as a norm itself", for in such an egalitarian world figures can no longer be marked as deviations from the norm. After tracing the autonomy of beauty and imitation in the rhetorical tradition, the theory of art, Todorov persuasively argues that aesthetics, in its modern conception, begins precisely where rhetoric ends. He then

er contends, that this substitution of aesthetics for rhetoric coincides with the passage from classical to romantic.

Chapter six, "The Romantic Crisis", is the centre-piece of this work. Todorov begins here by eliciting from the German Romantics, beginning provocatively with Karl Philipp Moritz, a conceptual characterization of the aesthetic object. He then goes on to show how these familiar characterizations of the aesthetic object, for example, as the aesthetic autonomous totality incapable of being completely discursively analysed, come to define the symbol in opposition to allegory. This leads Todorov to suggest that, in the last analysis, the entire romantic aesthetic can be treated as a semiotic theory.

Chapters seven to ten provide a modern counterpart to the passage traced in the first six chapters; however, in these chapters the movement is across disciplines rather than through history. Chapter seven offers a critique of Lévy-Bruhl's account of the "primitive mentality". For Todorov what others designate as our primitive past is a projection of our implicit knowledge of the symbol as it exists in the present. In the original version of *Theories* chapter eight provided a detailed analysis of Freud's tropology together with an argument claiming that his greatest contribution to the study of the symbol is in the area of interpretation. The translation, under the author's direction, has eliminated the discussion of Freud's tropology, and an appendix entitled "Freud on Enonciation", leaving an elliptical eight pages of argument. Saussure's account of glossology forms the object of chapter nine, with the final chapter devoted to a brief appreciation of Roman Jakobson's poetic project.

In some of Todorov's discussions, most notably in this account of Lévy-Bruhl and Jakobson, the structuralist conception of language as an oppositionally structured, autonomous object, obliquely surfaces. This leads to a corresponding occlusion of the social and historical parameters of symbolic activity. Todorov, then, does appear to believe that the symbolic can be considered apart from its conditions of productive and reception.

This is, as I understand it, the first volume of a diptych on symbolism, the second volume *Symbolism and Interpretation*, is in the process of being translated. It will be interesting to see how a poetics of the symbol fares in the domain of interpretation, where the production and receptive features of linguistic activity come to the fore.

Jay Bernstein

Jay Bernstein is lecturer in philosophy at the University of Essex.

Personal stories

Ding Ling's Fiction: Ideology and narrative in modern Chinese literature.

By Yi-tai Mei Feuerwerker Harvard University Press, £16.00 ISBN 0 674 20765 3

If Ding Ling's name rings a bell, it will recall a Chinese woman writer on whose head the Party called down its thunderbolts in 1957, as much for her less than "political" past as for her "anti-Party" intellectualism, and who was reported slightly thereafter only cleaning the proverbial lavatory except when she was presumed dead during the Cultural Revolution (fortunately she survived, and is back with us). But for the western reading public, any familiarity will be faint, and Yi-tai Feuerwerker will have little acquaintance to build on. Furthermore, she has chosen to write about Ding Ling's fiction, which many fewer than those who know of her have found a way to hold. Still, attention of an audience far broader than that of the new China hands, and First, contending however problematically with the work of literature, does not preclude consideration for the environment in which it is produced, particularly the immediate

personal one. Not to reveal that Ding Ling's early stories of the febrile fancies of young females adrift in the cities reflected her own experiences as one such girl from the provinces in the 1920s would be a form of self-denial that Feuerwerker evidently does not believe in. All the works discussed are in fact related to the author's personal history, and more broadly to succeeding literary trends, briefly but cogently summed up. So "human interest" and cultural setting find their place, entirely properly, in her book. Secondly, she provides a centrepiece for each of the periods into which Ding Ling's creative career divides. Companion pieces are dealt with concisely, from the point of view of their elements and emphases; to the centrepiece she gives the full treatment, with extensive quotation and detailed summary, with the result that her reader feels that he knows the story well, is almost persuaded that he has read it himself.

It is a mark of the rapidity of change in modern China that these periods each lasted only a few years. The political vortex accelerated the process of transformation for those who where drawn into it. Thus to the utterly self-absorbed author of "The diary of Miss Sophie" (1928), writing is a means of fixing her individual identity, and a form of self-assertion. "One day" (1931), written after her husband had been shot as a Communist earlier the same year, features in contrast a writer who must abnegate all thoughts of self in order to present the working class to the working class. Thirteen years on, and not without some ups and downs, Ding Ling succeeded not only in making herself invisible as author but also in representing characters who had no private thoughts or lives; the example chosen to illustrate this phase is "The people's artist Li Bu", a piece of "reportage" on which Mao Zedong congratulated her for following the precepts of his Yanan talks of 1942. The last centrepiece, as it had to be, the prize-winning novel, *The sun shines on the Sanggan River*, set in a northern village where heaven and earth conspire to effect land reform in 1946. So the author makes it seem, anyway, given the duty of orchestrating events in such a way that contemporary history bears out the known principles of history.

For all that Feuerwerker's book is a study of Ding Ling's fiction and no other person's, it will be apparent from this outline that her career was taken over by forces that controlled all writers in the Communist camp, and eventually in all China. As her tributary joins the main current, the key questions asked of her work accordingly move to the plane of universals, and literary theorists lend conspicuous support to the discussion. However, Feuerwerker takes from them only what she needs; her conclusions are the outcome of profound and prolonged reflection on her own part.

Ding Ling's fiction is a first-rate book about a second rank writer whose elevation to stardom in her profession is owed to her having stuck to her last in the service of the party that emerged as victors from the battlefield where the promise of men and women of more talent was blighted. The very success of her side then put paid to her in turn. In one way or another all her generation were losers. But that makes their stories all the more sympathetic.

D. E. Pollard

D. E. Pollard is professor of Chinese at the University of London's School of Oriental and African Studies.

Milton

The eighth and final volume of *The Complete Prose Works of John Milton* is published by Yale University Press at £16.95. The material in this volume, edited by Maurice Kelley, includes private correspondence from 1666, "Prose preliminary to *Sansone Agostino*" (1671), *A Fuller Course in the Art of Logic* (1672), *Of True Religion* (1673) and *A Brief History of Muscovy* (1682). Plans to include a section on Milton's annotations to the Greek texts have been dropped, since the principal source, the edition of Pindar at Harvard, is now thought not to have a clear place in the Milton canon.

BOOKS

Grand notions

Prejudices: a philosophical dictionary by Robert Nisbet Harvard University Press, £12.25 ISBN 0 674 70065 1

Most social scientists know well enough how to guard against naked prejudice manifested in objective science, at least in the works of their opponents. But they are less well defended against objective science slipped across in the guise of pure prejudice. So sly a reversal of the conventional rules of scholarly warfare proves a very effective rhetorical device. Not only is the usual search for sneaky value judgments rendered odious, but the mind finds itself opening the gates to simple and salutary truth.

Robert Nisbet is truthful, whether he is dealing with the trivialities of social science or the verities of moral sensibility. Some of his truth comes by way of ordinary sociology in the generalizing mode. His dictionary has entries under social change, social revolution, war, death and militarism, which summarize and interpret vast ranges of empirical data with mastery economy. But beyond these summaries there lies a critique of the huge rubbish tip that has filled up the mind of the European intelligentsia, and which no amount of commonsensicality seems able to erode. Most of the rubbish is theology converted to the political purposes of intellectuals. "Spilt religion" in the form of alienation, reification and ideology offers a plentiful store of delusion. What Nisbet tries to do is to free the mind from subjugation to non-existent "things" and from confinement within the boundaries of "isms".

The grandest notions inhabit our minds so pervasively that we can barely detect their presence, though we can name them. The idea of progress is one such, and Nisbet even seems to retain some faith in it, in spite of all the potent misuses it has suffered at the hands of classical liberals, welfare liberals and socialists. Another example is individualism, about which he is less sanguine. Individualism in his book, involves a weakening of all fruitful bonds and attachments, and leads, therefore, both to the narcissistic brethren of the free spirit and to the leveling of the absolute state. Statist centralism, bureaucracy and "judicial activism" all figure largely in Nisbet's personal demography. Yet another massive intellectual presence is the "great chain of being": the ascending scale or ladder of nature. The crucial transition occurs when the ladder is dislocated and turned into an ascension of time. Comparative sociology and biology have both been held in thrall to this ascending scale.

For Nisbet, nature makes leaps and takes off from the great Original. This is certainly a contentious area in the contemporary intellectual world, and Nisbet is not afraid to support Creationism (that is, theistic evolution), and a cautious rehabilitation of the Argument from Design. There follows a series of debunking exercises directed, not at science, but at the shrines scientists have erected to martyr-horoscopes and the inquisitions they have established. The prodigions of the Darwinian mandarin, in particular, come under attack. The recent craze for sociology and simplistic notions of genius and race are also singled out as illegitimate progeny within the "great chain of being". The emergence of "genius", of course, a very resistant problem, and one made worse by the cult of intelligence testing and all the vulgar little paper-backs which make money out of the power, is not with tedious pygmies imploding the shrunken mind of educational psychology, but with the sudden demise of clusters of "genius".

These are all this nothing of the conventional assault against science, and technology by environmentalists or by humanists. In Nisbet's view, the litany daily recited against technology has very little substance. Likewise, he has scant sympathy for the caterwaulings of humanists. This comes out very clearly in the entries on "Humanism" and on what he calls "Renaissanceism".

The humanist lobby sedulously fostered the myth of the Renaissance, and Nisbet points up the extraordinary influence of a misreading of Burckhardt's *The Civilization of the Renaissance in Italy*. He then goes on to exorcise today's descendants of the Italian humanists and the philosophers. They are, he says, (on page 264) "characteristically arrogant, opinionated, rootless, cynical, willing to sell themselves for wealth and affluence, ever eager to assault the public order and disturb the moral peace, only too happy to sacrifice profoundly, wisdom and learning upon the altar of brilliance". There lies in this a profound disgust with what Americans call "the academy", with all its foolishness and fearful following of trends, its obedience to gurus, living and dead, hiding behind the screen of free thought.

The final group of entries is made within the moral universe of Johnson and Voltaire. They comprise aperçus on moral conditions: crime and

punishment, effrontery, envy, enthusiasm, intimacy, boredom, permissiveness. I find Nisbet's drama of crime and punishment overplayed, though his assault on the medicalization of evil seems to me entirely proper. On enthusiasm, he agrees with the Bishop who told Wesley it was "a very horrid thing", though these days the political version is very much more dangerous than the religious one. These are all issues which social science characteristically avoids because they inhabit a moral world.

Nisbet is an eighteenth-century moralist, and not least in his last entry on "Wit". Wit, according to Nisbet, is a dangerous commodity. To exhibit wit is to risk one's career, whether as academic or as politician. Scholars rise by gravitas and sink by levity. But he must be talking mainly of America. Put a Swiftian modest proposal to an American audience and you will be dismissed as light minded or else taken seriously. But that a witty person can sometimes survive in America is proved by this ebullient collection of apophthegms, maxims, and truths.

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Social acts

The Individual and the Social Self: unpublished work by George Herbert Mead

edited with an introduction by David L. Miller University of Chicago Press, £10.40 ISBN 0 226 51674 1

To their early twentieth-century colleagues and admirers "Chicago pragmatism" was the work of two remarkable teachers: John Dewey and George Herbert Mead. One of Dewey's first and most telling decisions on behalf of the new University of Chicago was to bring Mead with him from the University of Michigan. Together they inspired a generation of American philosophers, psychologists and social scientists to re-establish academic inquiry on pragmatic, anti-dualist and experimental lines.

For modern social theorists Mead's influence has receded as Dewey's has advanced, for two main reasons. First, Mead, in contrast to the prolific Dewey, published almost nothing during his lifetime. His work was largely through manuscripts edited by sympathetic pupils and transcripts of varying quality of his teaching. Secondly, his basic ideas, repeated in different contexts, can appear to a modern eye stunningly or unsatisfyingly simple.

Mead's chief contribution to pragmatism was to focus on the meaning of human action, broken down into the components of gesture, in terms of the response which it evokes from a social situation. The act is symbolic of a system of meaning, and thus "sociality" (his central concept) consists of universal shared meanings exemplified by an agent's "taking the role of the other" in social interaction. Language, for example, demonstrates how social signs can be functionally identical for members of a community. Understanding and participating in such processes is, for Mead, an essential feature of humanity. One of his pupils quotes a typical remark in this collection: "the ultimate act of driving in a nail is for us the meaning of a hammer... a hammer is not a hammer to a gorilla".

The vehicle of Mead's thought at Chicago was his course on "Social Psychology", delivered almost without a break between 1900 and 1930, which forms the backbone of the most important posthumous volume (*Mind, Self and Society*), edited by Charles Morris in 1934. David Miller was a student in seven of Mead's Chicago classes and has gone on to become his most authoritative biographer (*George Herbert Mead: self, language and the world*, 1973). He has compiled here a further set of primary materials for Mead scholars: two anonymous sets of class notes

from "Social Psychology" in 1914 and 1927, an unpublished essay from 1917 on "Consciousness, Mind, the Self and Scientific Objects", and two short papers, probably by graduate students, working through psychological and physiological details of the "Functional Identity of Response" and the "Functional Identity of Stimulus".

Only one of these items can, of course, be properly described as unpublished work of Mead himself. Nevertheless the effect of the collection will be to round out standard interpretations of Mead's thought and add weight to his reputation as a teacher. The two sets of lecture notes demonstrate some significant shifts of interest over 13 years. Each begins with detailed analysis of the gesture and the social act. The 1914 text then moves through a discourse on contemporary race relations, a view of democracy as the solvent of caste, and a final section on the social function of art and literature.

The 1927 notes, in themselves, a useful supplement to the set employed by Morris, enter technically more sophisticated and contentious areas. There is a fundamental critique of Watsonian behaviourism, and many echoes of the organic "process philosophy" of Alfred North Whitehead. Miller, who followed Mead into a detailed concern with Whitehead, interestingly fixes the 1917 essay, which moves from an attack on contemporary neo-realism to a theory classed by Miller as "emergent evolutionism", as the point at which Mead became susceptible to Whitehead's approach.

The importance of a social psychology based on such principles as that of the "generalized other" (the term used in the 1927 notes to refer to the validation of communicative behaviour) to pragmatism and American social science is clear. Mead's work further undercut the dualism of mind and body, pointed to an experimental, open future rather than an institutionally constrained past, and made participation in the life of the community a moral as well as a practical imperative. But, as this material confirms, Mead and Dewey's benign, culture-specific view of advancing American democracy was ill-equipped to deal with opposition and minority dissent, both significant problems for pragmatic social and political theory.

David Watson

Dr Watson is dean of the modular course at Oxford Polytechnic.

Nationalism

Anthony D. Smith's book *Theories of Nationalism*, first published in 1971, is now issued in a new paperback edition by Duckworth at £8.95. It examines critically five of the principal theories that have been advanced to explain the rise of nationalist movements both in Europe and the developing countries.

David Watson

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Not the last word

Aesthetics and the Sociology of Art by Janet Wolff

Allen & Unwin, £10.95 and £4.95 ISBN 0 04 301152 7 and 301153 5

Janet Wolff's new book appears in a series called "Controversies in Sociology". In a strict sense this label is inapposite, for the book has less to do with the controversies within sociology than with the rather more significant controversies between sociology and the rest of the world, in this case with all those stubborn theories of art and aesthetics which have refused to comply with sociology's reduction of art to matters social.

In so far as she is talking to other sociologists, then her message ought to have been redundant; she is telling them to draw back from the full totalitarian onslaught in which sociologists in their more heady moments have felt inclined to indulge. She argues that art and questions of aesthetic experience and value have and must have a specific character, and that however important an understanding of the social and historical conditions of production and consumption is, it can never completely account for art.

This seems to me like skating on very thin ice. Her writing is lucid and she offers a neat introduction to the various contributing theories, but it becomes increasingly obvious that having balked at the latest wave of essentially un-sociological and broadly culturalist work, either for its failure to make sense of aesthetic pleasure (Foucault), for depending on unchallengeable notions of human nature, albeit materialist ones (Timpanaro, Raymond Williams and, she might have added, Lévi Strauss), or for the equally unchallengeable reductionism of psychoanalysis (Lacan of course and the work of the English critic, Peter Fuller), she makes little progress.

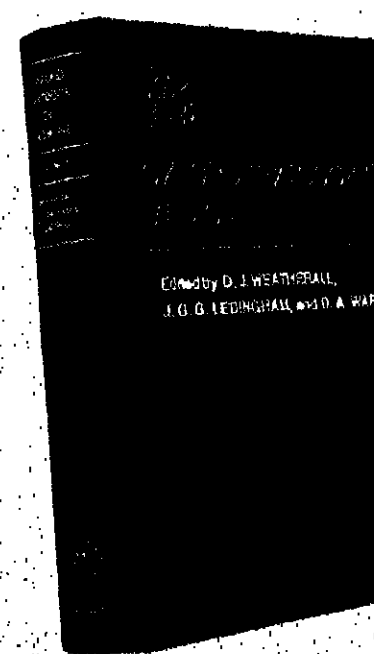
On the one hand "we require a more adequate, historicized, theory of human experience than has so far been produced"; on the other, despite the murky promise of discourse analysis and psychoanalysis "if the debate is between sociology and aesthetics, sociology has the last word". It is possible of course, and the whole book despite itself is evidence of it, that sociology is by no means close to knowing what that last word is.

Roger Silverstone

Roger Silverstone is lecturer in sociology at Brunel University.

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Edited by D.J. Weatherall, J.G.G. Ledingham, and D.A. Warrell



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Oxford University Press

BOOKS

A variety of dynamic controls

Dynamics of Biological Membranes: Influence on synthesis, structure and function
by Miles D. Housley and Keith K. Stanley
Wiley, £23.00 and £8.90
ISBN 0 471 100 80 3 and 951

All cells have an outer biomembrane, a plasma membrane, which carries the recognition sites for sensing the external environment and which also controls the ions, water and other molecules which enter and leave the cell. Inside the cell other biomembranes encapsulate the various functional units such as the mitochondria, the nucleus and the endoplasmic reticulum.

In the eye, other biomembranes organize the visual pigments; and in plants chlorophyll is organized within chloroplast membranes. It is clear from many studies that biomembranes are important for controlling permeability processes and also for spatially organizing enzymes and pigment molecules. Some disease conditions such as multiple sclerosis and perhaps muscular dystrophy have also been linked to changes in biomembrane properties.

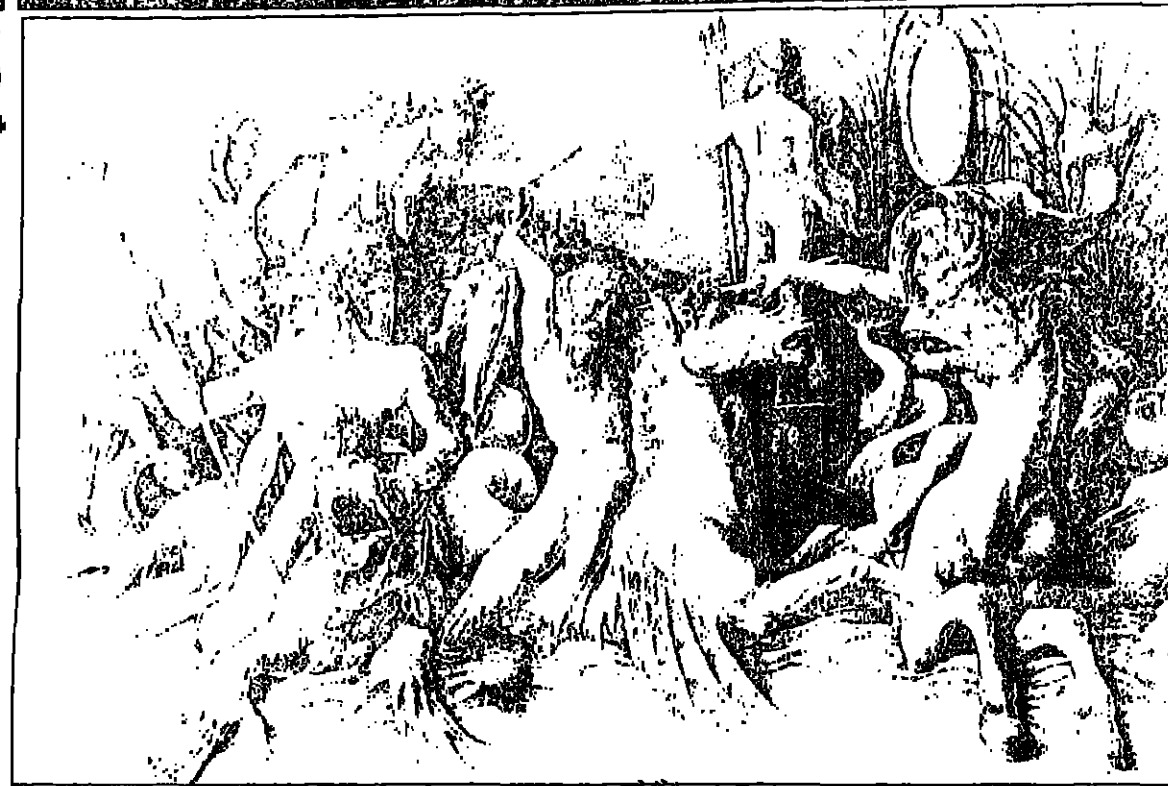
Although the concept of a biomembrane was introduced as long ago as the beginning of the century, it was electron microscope studies which revealed the many types of biomembranes which occur with all types of cells. However, these early studies projected a rather static and uniform picture of biomembranes. More recent studies using physical techniques have shown the way in which the proteins are arranged in a lipid bilayer matrix, and these studies emphasize the dynamic character of biomembranes. From this work concepts such as biomembrane fluidity, phase transitions, lipid diffusion, protein rotation and lateral motion have been developed.

This book, which attempts to bridge the gap between research level review volumes and short textbooks, discusses the structural and functional characteristics that have contributed to the concept of the dynamic biomembrane. It contains seven chapters ranging from descriptions of membrane components (for example, the lipids, proteins, carbohydrates and cholesterol) to discussions of lipid and protein mobility, lipid-protein interactions, asymmetry of components, reconstitution, membrane turn-over and permeability processes. The authors are two young scientists who have themselves made important contributions to this field.

The book is well produced with good diagrams and brief and succinct summaries at the end of each chapter, as well as selected references for further reading. However, it does tend to over-emphasize some of the authors' and their colleagues' own contributions, particularly with regard to the controversial concept of the lipid annulus, but perhaps this is to be expected.

There are also one or two generalizations which I found surprising; for example, "Bacteriorhodopsin and rhodopsin [from animal retinas] should not be confused as their structures are not related". My own impression, but I may be mistaken, is that recent studies of amino-acid sequences of rhodopsin have led to the suggestion that the structures of these two important proteins are indeed similar.

In the scientific journals and research publications, the debate continues on many of the topics discussed in the book; for example, the molecular bases of permeability processes, the way in which cell fusion occurs, and the basis for lipid asymmetry, and the basis for asymmetric action. Views on biomembrane structure and functions have changed considerably during the past 12 years, but there are still important questions to be clarified. This book



"Battle of the Sea-Gods", an engraving by Andrea Mantegna (1431-1506). Taken from *Drawings in the Italian Renaissance Workshop* by Francis Ames-Lewis and Joanne Wright, published by Hurtwood Press (in association with the Victoria and Albert Museum) at £11.95 to accompany an exhibition of early Renaissance drawings being held at the museum until May 15th, 1983. (A paperback version is available from the museum at £4.95.)

young graduates to this fascinating subject, the ramifications of which extend into biology, botany, physiology and medicine.

Dennis Chapman

Dennis Chapman is professor of biophysical chemistry at the Royal Free Hospital School of Medicine, London.

Maths for biologists

Differential Equations and Mathematical Biology
by D. S. Jones and B. D. Sleeman
Allen & Unwin, £15.00
ISBN 0 04 515001 X

Between the elegance of mathematical theory and the messiness of application there is an unresolved tension. This book, for all its undoubted strengths, suffers from it. Intended to be used variously as a course in differential equations for students of biology, or as a course in biological modelling for students of mathematics, it falls short, I think, of both its aims. It does not adequately discuss the difficulties of application; yet also, in attempting to avoid too much abstract mathematics, it does not always manage to unify what at times comes across as a random assortment of ad hoc techniques.

It does, however, have many very admirable features. The authors write clearly, preferring words over symbols, examples over generalizations. Their book is stimulating and enjoyable. It covers both ordinary and partial differential equations - the former developed as far as phase diagrams, the latter mostly confined to linear equations of the first and second orders. Within these limits it is thorough, and it has numerous exercises (and solutions) with which the reader can practise. There is also material on evolutionary equations and on catastrophe theory. Biological applications are illustrated principally in five contexts: the heart-beat cycle, the transmission of nerve impulses, chemical reactions, epidemics, and competition between species of predator and prey.

Despite the diversity of these illustrations, however, the book does not really describe how readers might go about applying differential equations for themselves. Questions keep springing to mind that more often than not go unanswered. Why choose precisely this differential equation, or look at this class of solutions? When should we use a differential equation rather than heuristic statistical methods? How do we check that our solutions are biologically valid? How, in other

words, does the mathematical theory interact, through statistical theory, with experiment? Related to these questions is the absence of any more than passing reference to numerical techniques of solution; the absence of any reference at all to the practical value of stochastic methods; and the absence of any illustrations from botany or agricultural science.

So the book does not deal with some important aspects of application. Yet on the other hand it is perhaps not mathematics enough; some of the theory could have been easier to follow if slightly more than "first-year university" mathematical knowledge had been assumed in the reader. Systems of ordinary differential equations, for instance, could have been solved more concisely - and, in my view, more comprehensively - if matrices and eigenvalues had been used explicitly. Of course, this is all a matter of judgment, and generally I do think the authors have decided wisely what theory to leave out: thus they are obviously right not to assume knowledge of functional analysis when they investigate boundary-value problems. But the ultimate danger in simplifying the mathematics is that non-mathematicians might come away with the idea that there are no difficulties at all, and consequently might not fully appreciate when they should discuss their experiments with a mathematician or a statistician.

If this book were to be used in the ways the authors intend, its strengths would have to be carefully supplemented to counteract its weaknesses. On its own it would be incomplete.

Lindsay Paterson

Lindsay Paterson is a member of the scientific staff at the ARC Unit of Statistics, University of Edinburgh.

Nucleic acids

Nucleic Acid Biochemistry and Molecular Biology
by W. L. P. Mawaring, J. H. Parish, J. D. Pickering and N. H. Mann
Blackwell Scientific, £14.80
ISBN 0 632 00632 3

This year marks the thirtieth anniversary of the publication in *Nature* by J. D. Watson and F. H. C. Crick of their classic paper proposing a structure for deoxyribose nucleic acid (DNA). Perhaps it is a reflection of the fact that university undergraduates and even A level students nowadays take this structure so much for granted that this key paper is not listed in the references at the end of this book - or does it perhaps reflect the authors' expressed aim "to try

and look into the future"?

Students of biochemistry and molecular biology will appreciate this comprehensive yet compact text, which is well written and clearly illustrated. It is, however, a textbook on nucleic acid biochemistry and those aspects of molecular biology of interest to nucleic acid biochemists, not a textbook on molecular biology - a limitation not immediately apparent from the ambiguous title.

Within the narrower interpretation of the title this is an excellent text in many ways. After a brief introductory chapter, which itself might be suitable as a simple primer, the major part of the material has been divided into a series of more or less self-contained chapters. These cover the biosynthesis of nucleic acid precursors; the structure, properties and sequencing of nucleic acids; replication, repair and recombination of nucleic acids in bacteria; transcription and translation of nucleic acids in bacteria; the structure and replication of chromosomes in eukaryote (higher) organisms; transcription and translation in eukaryotes; and finally two chapters on organelles and on recombinant DNA.

The authors divide their material both sensibly and logically. There are sufficient differences in general, let alone in detail, between prokaryote (lower) and eukaryote organisms in the ways DNA is replicated, in transcription and in translation to merit separate treatment of these topics without tiresome duplication. Indeed, where attempts are made to treat them together they fail. It is the differences that tend to emerge rather than the common factors.

In several instances the most recent advances in knowledge have either come too late, or come to the attention of the authors too late, to be included. Indeed, few of the references to original sources are post-1980, a regrettable feature in a subject where progress is rapid. The authors are all too conscious of this fact and point out in a note added in proof that "DNA sequencing has advanced beyond the state described"; this is clearly not the "state of the art" treatment. The other very telling area is recombinant DNA, where again the authors call attention to the shortcomings of their chapter in a note added in proof.

Stuart Glover

Stuart Glover is professor of genetics at the University of Newcastle upon Tyne.

Topics in Ordinary Differential Equations, by W. D. Lakin and D. A. Sanchez, has been re-issued as a Dover paperback by Constable at £3.40. Intended for mathematics undergraduates and advanced students in the natural sciences, the book suggests some interesting methods for obtaining analytical approximations to solutions.

Marine ecology

An Introduction to Marine Ecology
by R. S. K. Barnes
and R. N. Hughes
Blackwell Scientific, £11.80
ISBN 0 632 00892 X

Richard Barnes and Roger Hughes have produced a text which will be of considerable value to students studying either marine science as a speciality, or general biology or ecology. Their approach, however, is selective, in both the extent to which particular topics are discussed, and the specific illustrative studies which are presented. By definition, therefore, the outcome is a synthesis which cannot be all things to all people. Nevertheless, I feel confident that this will become a widely read and appreciated contribution.

The first chapter frames the subject in its broadest (global) context and perhaps suffers only from an inadequate formulation of fundamental oceanography. In particular, discussion of the oceanic redistribution of heat and oxygen, and indeed the structures of water masses and their circulation, could profitably have been included. It is, however, heartening to encounter detailed illustrations of organisms referred to throughout the text from the very beginning: the value of such drawings to undergraduates cannot be overemphasized.

The second chapter considers surface water plankton systems. Here I was surprised to see the dismissal of the phenomenon of vertical migrations in only three pages. Chapter three provides a very useful account of the structure and function of intertidal and shallow-water soft-sediment communities. As in the previous chapters the emphasis lies on the broader questions, with examples, but the reader is left with little appreciation of the multiplicity of interactions between sediment structure and the organisms themselves.

The subsequent chapter is necessarily brief and concentrates on the production of mangroves and sea-grass assemblages. Perhaps a major omission here, however, is of *Phyllospora*, the unusual and extensive rocky shore monocotyledon of the Pacific north-west.

Chapters five and six (on kelp forests and coral reefs, respectively) will perhaps be of most use to students. Both topics have vast literatures which are difficult to present in the requisite concentrated form. The resulting chapters are both highly informative and readable and should provide a useful introduction.

Chapter seven, however, is a considerable disappointment. In devoting barely 10 pages to the deep-sea benthos I feel the authors have performed not only an injustice in excluding a large body of benthic marine studies, but have missed an opportunity especially in terms of the general readership for which their book is intended. Of all the recent advances in biological knowledge surely the discovery and preliminary investigations of the hydrothermal vent communities must be the most astonishing and revealing?

Chapter eight presents a compilation of nekton (mostly fish) population data and precedes the last major chapter in the text, on life-history strategies. In general the coverage of sub-topics in chapter nine is commendable, although many may question some of the specific studies selected. The book is completed by two chapters on speciation and the biogeography (together with the associated discussions of ecological diversity), the marine ecosystem as a functional unit, and man's impact thereon.

Although I am disappointed at the brevity with which deep-sea benthic ecology is treated and at the virtual absence of discussion of epifaunal ("fouling") communities, I can wholeheartedly recommend this to undergraduates.

C. D. Todd

C. D. Todd is lecturer in marine biology at the University of St Andrews.

BOOKS

ENGINEERING

Structural safety

Uncertainty Analysis, Loads, and Safety in Structural Engineering
by Gary C. Hart
Prentice-Hall, £19.45
ISBN 0 13 935619 3

It has long been recognized by engineers that, due to the random nature of the parameters involved, there is an inherent element of uncertainty in any technological endeavour, and this thinking is now being reflected in the current codes of practice in which the engineering parameters are described in terms of the probabilities that acceptable design limits will be exceeded.

Most texts on structural mechanics consider the material properties, structural geometry and loading to be deterministic, thus necessarily producing deterministic values for the structural response. Although the lack of reality in such an approach has always been realized, the development of a more realistic assessment has largely been neglected.

This book presents an excellent introduction to probability methods and forms a useful addition to existing works on structural mechanics. It treats the subject of uncertainty from basic considerations, and one of the most pleasing features is that, after the development of each topic, simple numerical examples are presented, these serving to supplement the understanding of the mathematical analysis in a most powerful manner.

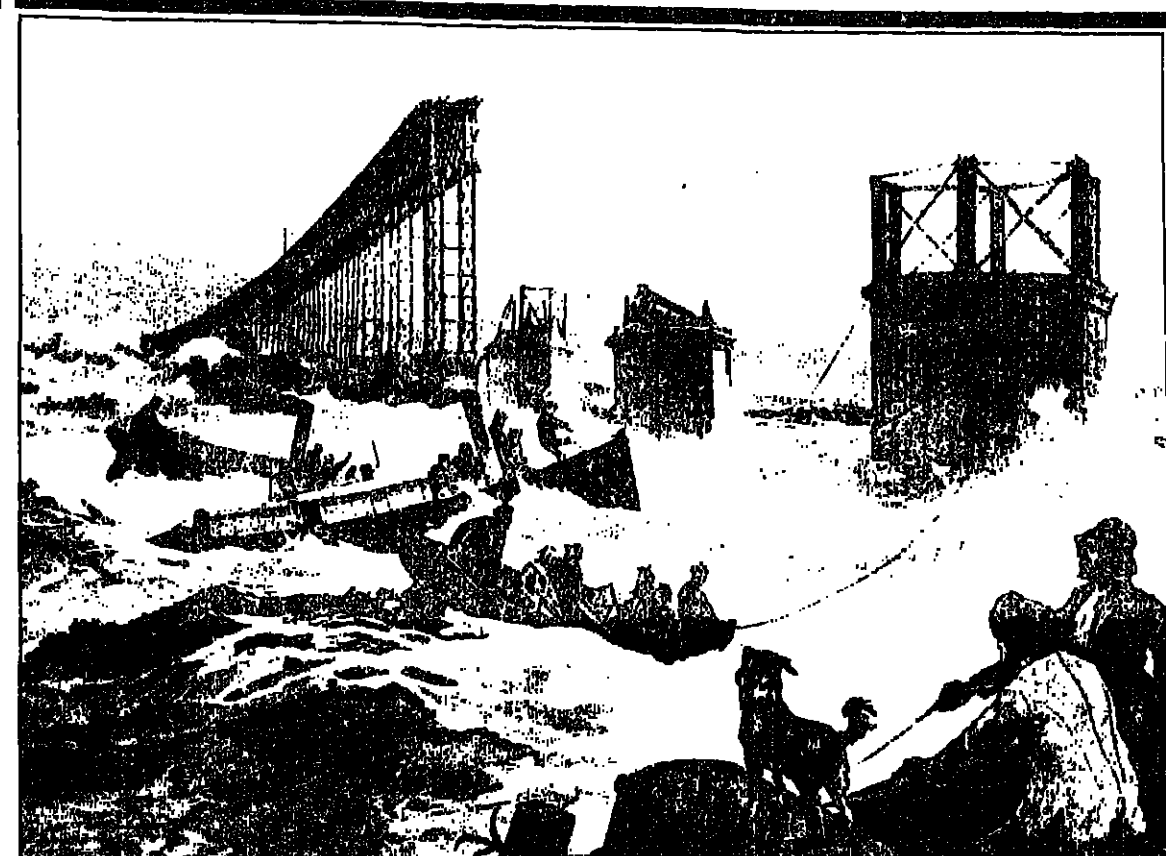
The work is divided into four well-defined sections: statistical methods of analysis, structural analysis, structural failure, and load analysis. The first presents the basic statistical requirements necessary for an appreciation of the remainder of the book, beginning with a description of random and deterministic variables and the fundamental concepts of variance and standard deviation. The ideas behind the formulation of probability distribution functions are interestingly developed, although a description of where the various functions discussed are applied could have given a clearer physical appreciation of the mathematical results.

The second section deals with the application of statistical methods to structural response. Classical structural analysis involves the ascribing of unique values to the material and structural properties, this formulation leading naturally to unique values of the response parameters. In this section analyses using the random nature of the structural variables are developed giving solutions in the form of probabilistic response. Two methods are described for the calculation of the response uncertainty: the analytical method of linear statistical analysis and the, perhaps more fundamental, Monte Carlo method. The chapter concludes with a short but lucid introduction to the theory of decision-making.

A rather short chapter then follows concerned with the probabilistic analysis of structural safety in which the key topics are structural failure and factors of safety. Because of its fundamental simplicity, the Monte Carlo method is again invoked as a solution process.

The final section treats the important subject of loading, perhaps the most basic of parameters in structural engineering practice. Loading to which structures are subjected are of widely differing forms and the author breaks the treatment neatly into three classes: dead and live, wind, and earthquake loading. The fundamental nature and description of such loads is clearly given, the effects of wind and earthquake loading being especially well explained.

The further problem of deciding whether or not a calculated probability is acceptable is unfortunately only briefly considered, but as an introduction to uncertainty analysis this book serves its purpose admirably.



Etching of the Tay Bridge Disaster in 1879, from "The Illustrated London News". Taken from *The Nature and Aesthetics of Design: a design handbook* by David Pye, recently re-issued in paperback by Herbert Press at £6.95.

The author has prepared his text and examples with a great deal of care and thought and has explained the concepts in a simple and enlightening manner. His book will therefore be a valuable contribution to the important concepts of uncertainty theory and to their application to structural safety.

D. J. Just

D. J. Just is lecturer in civil engineering at the University of Aston.

Masonry arches

The Masonry Arch
by Jacques Heyman
Ellis Horwood: Wiley,
£16.50 and £8.50
ISBN 0 85312 500 7 and 501 5

Masonry arches are not only of historical interest. Despite the enormous road building programme of the sixties and seventies, they still form the basis of the greatest proportion of road bridges in Britain. Although it has been recorded that there are thirteen thousand on the Scottish major road system, the English system is more dense and minor roads and byways must account for an even larger number. Most of them are older, some many times older, than the hundred and twenty years a modern bridge is designed for. Indeed, Professor Heyman discusses work on Teston Bridge in Kent, built in the thirteenth century and still carrying traffic.

In recent years arches have been neglected by most engineers, as work in new construction has been readily available, and offered more obvious excitement. Longevity may have contributed to this lack of interest, as a structure which has stood for centuries and which has shown no visible sign of deterioration in a life time, comes to be regarded as part of the earth on which it stands. It has been easy for researchers to dismiss arches as fully understood, but it is clear that they were not. It is no longer acceptable to decide what load a bridge can safely carry and either put up a weight limit sign or pull down widely differing forms and the author breaks the treatment neatly into three classes: dead and live, wind, and earthquake loading. The fundamental nature and description of such loads is clearly given, the effects of wind and earthquake loading being especially well explained.

Although this slim volume is a collection of material published piecemeal elsewhere, its publication is justified because the whole is more than the sum of the constituent parts. To an engineer it is readable on two levels. It is clearly a textbook and will be prized as a ready source

of reference. To dip for information without its context is, however, to miss much of value. The steps by which the argument is advanced are sufficiently small for the book to be enjoyed as light reading, even by students. Much of it would not be beyond the layman, although to have removed jargon completely would have extended the text unreasonably.

A chapter on the history of the study of arch behaviour presents an interesting insight into the progress of our understanding of structures. Covering the period from the late seventeenth century to the late nineteenth century, it implies that the study of structures followed established need and that academic interest in arches ceased immediately when the need was removed. Twentieth-century workers Pippard, Henderson and now Heyman, have also responded to a need as increased loads have brought ancient bridges to the point of collapse. It is also interesting to note that throughout the period considered, theoretical and practical work have been interdependent. There has not been a long period when analytical or empirical methods have held sole sway.

The book is timely, as bridge maintenance is growing in importance and as we cannot afford to replace old bridges if they fall into disrepair. There is even discussion of a revival in arch bridge building. The long life to be expected must favourably affect the lifetime cost.

William Harvey

William Harvey is lecturer in civil engineering at the University of Dundee.

Concrete and steel

Analysis and Design of Structural Connections: reinforced concrete and steel
by M. Holmes and L. H. Martin
Ellis Horwood: Wiley,
£25.00 and £9.50
ISBN 0 85312 215 6 and 549 X
Reinforced Concrete Design
(second edition)
by W. H. Mosley and J. H. Bungey
Macmillan, £16.00 and £7.95
ISBN 0 333 335 56 2 and 57 0

Steel and concrete are major construction materials - relatively cheap, strong and durable. A reinforced concrete or steel structure is, however, only as safe and stable as the members connecting them. Connections between structural members thus form an integral part of the analysis and design of structural members. The design of structural joints has, however, been a much neglected subject - research informa-

tion on their behaviour is limited, and scattered widely in the literature, the subject is not always taught in universities and polytechnics, and the relevant British Standards codes do not always provide adequate data for their design. Design of structural joints is therefore left to the engineer, and is often based on a trial and error process, sometimes supplemented by tests.

Holmes' and Martin's valuable book is based on the limit state method of design which considers the safety of the structure at failure and its everyday behaviour. There are six chapters, two of which deal with reinforced concrete connections and three with steel connections. Chapter one provides a brief introduction to structural design, properties of materials and structural connections, and to the factors influencing their safety, stability and durability. This is followed by two chapters dealing with connections in concrete *in situ* and precast concrete respectively. A wide range of familiar connections are discussed: beam-column connections, design of corbels, column-column and column-foundation connections.

Each chapter first presents a detailed discussion of the complex system of forces acting on the connections, and these are amplified by simple but clear force diagrams. A large number of detailed worked examples is then provided to clarify the analytical procedures. One possible limitation is the shortage of dimensioned sketches accompanying the worked examples. It would also have been useful to see more diagrams detailing the design constraints and their relevance to the behaviour of the connections.

This very useful and practical book is clearly a testimony to the vast contribution that the late Professor Holmes and his colleagues have made to the field of relating the analysis and behaviour of structural connections to their design and detailing.

Mosley and Bungey's book is a second edition of a popular textbook for engineering undergraduates and young practising engineers involved in the design of concrete structures. It sets out to provide a clear and straightforward introduction to the principles of the limit state method of design, and the application of these principles to the design and detailing of reinforced and prestressed concrete members.

The second edition includes new material related to the yield line and strip methods of analysis of slabs, an extension of the limit state design of water-retaining structures, and further detailed discussion of shear, and prestress losses and end block design in concrete. As there have been recent changes in the yield stress specifications of steel reinforcing bars, these have also been considered in amending the worked examples.

R. N. Swamy

R. N. Swamy is reader in civil and structural engineering at the University of Sheffield.

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Edward Arnold

41 Bedford Square, London WC1B 3DQ

Robot Manipulators

Mathematics, Programming, and Control

by Richard P. Paul
Robot Manipulators is firmly grounded on the theoretical principles of the subject and makes considerable use of vector and matrix methods in its development. Designed for graduate courses in robotics as well as for practising engineers, the book covers homogeneous transformations, defining transformation equations, solving transformation equations, differential transformation relationships, motion trajectories, dynamics, digital servo systems, force transformations, compliance, and manipulation languages. *Artificial Intelligence Series*, 300 pages, illustrated, 1982, £24.75

Robot Motion

Planning and Control

edited by Michael Brady, John Hollerbach, Timothy Johnson, Tomás Lozano-Pérez and Matthew Mason

This book brings together 19 papers of fundamental importance to the development of a science of robotics. These are grouped in five sections: dynamics, trajectory planning, compliance and force control, feedback control, and spatial planning. Each section is introduced by a substantial analytical survey that lays out the problems that arise in that area of robotics and the approaches and solutions that have been tried, with an evaluation of their strengths and shortcomings. In addition, there is an overall introduction that relates robotics research to general trends in the development of artificial intelligence. *Artificial Intelligence Series*, 550 pages, Expected summer 1983, approx £25.00.

Massachusetts Institute of Technology
The MIT Press
125 Buckingham Palace Road,
London SW1W 9SD

BOOKS

ENGINEERING

Producing cold

Principles of Refrigeration
by W. B. Gosney
Cambridge University Press, £47.50
ISBN 0 521 23671 1

Like teachers in many other universities, polytechnics and colleges where refrigeration is included as part of the mechanical engineering course, I have searched in vain for a modern textbook on the subject to recommend to my students. However, at over 600 pages and at nearly £50 Professor Gosney's book seems doomed to become a library reference volume rather than the textbook he intended. The principles are there and well explained but they are swamped by too much detail. For instance, Professor Gosney includes several pages in chapter two listing pipe sizes and their wall thicknesses and the size of spanners for different joint fittings.

In the preface the author admits that the book as originally planned was to have covered the application of refrigeration methods in practice, but at a late stage this scheme was found to be impracticable for the book would have been much too long. The light appears to have dawned at the end of chapter six, for the last two chapters are much more concise yet give sufficient coverage of gas refrigeration cycles. It is a great pity that at this state Professor Gosney did not go back and prune the earlier chapters of unnecessary details.

This would probably have meant, among other things, the removal of much historical detail, although this is of interest to the general reader and perhaps the postgraduate student. Herein lies part of the problem, that in trying to cater for the needs

of undergraduates, postgraduates and the general reader, the book fails completely to satisfy any one group. The undergraduate will be put off by the sheer size of the volume, the postgraduate by the fact "that certain points appear to be unduly laboured, and that the obvious is stated again and again", and the general reader by the technical detail.

It seems rather strange that in the first chapter on "methods of producing cold" that there is no introductory section on "why cold is needed". Of course, some mention of applications is made in later chapters and the preface promises to another book on refrigeration methods in practice, but surely a brief survey of modern applications of refrigeration would have been of great interest to all readers before embarking on the rest of the book.

However, this is a useful work of reference. It is very easy to read and to learn from, and I would refer undergraduates to specific topics in it; in particular it contains one of the few detailed descriptions of adsorption refrigeration systems. A much abridged version in paperback would be appreciated.

C. A. Bailey

C. A. Bailey is a fellow of Keble College, Oxford, and university lecturer in engineering science.

Sound sources

Sound and Sources of Sound
by A. P. Dowling
and J. E. Flowers Williams
Ellis Horwood: Wiley,
£25.00 and £8.50
ISBN 0 85312 400 0 and 527 9

The study of acoustics in schools and university physics departments has declined in favour of what is considered to be modern science. In engineering, however, there has been a modest renaissance in this subject during the past 25 years, fuelled by interest in environmental noise control (particularly aircraft noise), by requirements to reduce industrial noise to avoid the infliction of occupational deafness, and by rapid growth in the field of the transmission of noise in water. (As most of this latter work is the product of defence research, particularly submarine counter-measures and detection, much of the related literature is unavailable.) All these subjects require a knowledge of sound sources and methods of propagation.

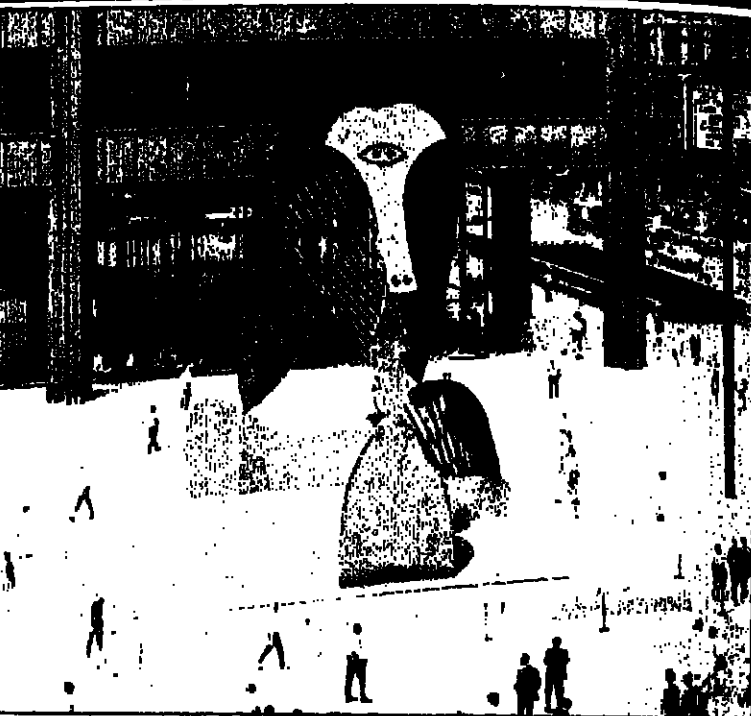
The interest in aircraft noise in the 1950s directed many research workers back to the work of the physicists and mathematicians of the nineteenth century, particularly Lord Rayleigh. Although their work provided the intellectual basis for understanding the production and transmission of noise in gases, fluids and solids, it was not until the problem of making quieter aircraft engines became important that more practical approaches to the problems were applied. The subject attracted a vast amount of experimentation, particularly on the part of aircraft and engine manufacturers who were desperately attempting to produce noise suppressors to enable the new jet-powered aircraft to operate free from the constraints imposed by airport authorities in their vain attempt to reduce noise levels.

It was during this period that the pioneer work of Sir James Lightill provided the basis for understanding in practical terms the mechanism of subsonic jet noise production, and shortly afterwards he and Professor Flowers Williams extended that understanding to the supersonic jet. Since that time, Professor Flowers Williams has widened his research into the generalized topic of sound production and transmission, successfully providing a more rigorous approach to our understanding of this important subject.

It is this work which forms the basis of this book. Essentially an undergraduate text, it is clearly written with symbols, equations and diagrams simply and neatly arranged, in the fashion of United States textbooks. It contains a series of exercises at the end of each chapter with the solutions clearly explained in a section at the end of the book.

Although the book is wide-ranging in its contents, it concentrates on the effects of noise in air and water. It is refreshing to have a text which combines the study of both media, as the student is usually referred to different reference material and therefore often finds it difficult to compare the important differences and similarities which exist between the two.

The book begins with a sensibly developed chapter on the characteristics of sound. The section on subjective units, however, is patchy and should either be expanded, or entirely omitted and the reader guided elsewhere. Chapter five on ray theory will be very useful, particularly the more rigorous definitions, although the reader may be left with a rather simplified picture of sound propagation effects. Later chapters cover a variety of topics: sources of sound, reciprocity, moving sources, and flow-induced vibration and instability.



Steel statue by Pablo Picasso, in front of Chicago's Civic Center. Taken from *Copper in Iron and Steel* by Iain Le May and L. McDonald Sketky, published by Wiley at £53.00.

cises at the end of each chapter with the solutions clearly explained in a section at the end of the book.

Although the book is wide-ranging in its contents, it concentrates on the effects of noise in air and water. It is refreshing to have a text which combines the study of both media, as the student is usually referred to different reference material and therefore often finds it difficult to compare the important differences and similarities which exist between the two.

The book begins with a sensibly developed chapter on the characteristics of sound. The section on subjective units, however, is patchy and should either be expanded, or entirely omitted and the reader guided elsewhere. Chapter five on ray theory will be very useful, particularly the more rigorous definitions, although the reader may be left with a rather simplified picture of sound propagation effects. Later chapters cover a variety of topics: sources of sound, reciprocity, moving sources, and flow-induced vibration and instability.

Minor criticisms are that the book may provide the impression that the subject can be treated as precisely as the book implies; and that there are relatively few references (and where these do occur they are abbreviated, omitting titles). However, the book should become widely used in university courses, as the subject should form a basic part of an engineer's education.

J. B. Large

J. B. Large is dean of the faculty of engineering and applied science, and former director of the Institute of Sound and Vibration Research, at the University of Southampton.

Engine design

Turbocharging the Internal Combustion Engine
by N. Wilson and M. S. Jelinek
Macmillan, £37.00
ISBN 0 333 24290 4

Turbocharging increases the power to weight ratio of large diesel engines and also decreases the cost per kilowatt. For the car designer it offers better vehicle fuel economy by enabling smaller engines to replace large ones. It is not a particularly new concept: the original ideas were developed in the 1920s and by the 1940s turbocharged engines were supercharged or turbocharged. The Rolls Royce Merlin engine which powered the fighters of the Battle of Britain was supercharged using a compressor, or similar, to that on a turbocharger, driven from the engine crankshaft.

The turbocharger utilizes the hot gases of the engine exhaust to drive the compressor. Until now, the only major text book devoted to supercharging has been Zinner's *Supercharging of Internal Combustion Engines* (Springer, 1978); otherwise, the engineer in this field has had to refer to a broad range of books and papers, some specializing in compressor design, others on turbine design, and still others on the design of the turbocharger itself. This book, written by two experts in the field of engines and turbochargers, amalgamates this work and supplies a comprehensive list of references.

After a general introduction, the first five chapters deal with the turbo-machinery in detail, with separate chapters on radial-flow compressors, and radial-flow and axial-flow turbines. Chapters six and seven discuss the merits of the different systems of turbocharging and chapter eight describes more complex exhaust manifold designs. There are also chapters on turbocharging petrol engines, high-output diesel engines, transient performance effects, and noise and exhaust emissions. A final chapter considers modelling.

The scope of the text means that the authors have not dealt with certain areas in as much depth as a specialist might desire, and some of the techniques used are rather old-fashioned. This is particularly true in the turbomachinery chapters. Here one-dimensional analysis is used extensively, even though the compressor or turbine designer would probably be reading this book to gain some appreciation of the problems posed by using the turbo-machine in an unsteady flow situation. The opposite would be true of the engine combustion expert who would benefit from an appreciation of the role of the turbomachinery.

In writing the text the authors have attempted to relegate much of the mathematics to the modelling section, at the end of the book. Although this makes the text easier to read in that there are few mathematical interruptions, it is not always easier to understand. Although the modelling section is quite adequate as an introduction to various techniques, certain concepts are rather scantily described and would be difficult to use (for example, the section on wave action modelling). One major criticism is that the diagrams are produced in a variety of styles and at severely reduced scales; a more minor point is that the authors have not always shown much imagination in allocating symbols to parameters, for example, RN for degree of reaction, PR for pressure ratio.

This book is essential reading for any engineer interested in turbocharging internal combustion engines, whether petrol or diesel. It brings together a broad range of material from the literature and will also serve as a useful text for postgraduate teaching.

D. E. Winterbone

D. E. Winterbone is a professor of mechanical engineering at the University of Manchester Institute of Science and Technology.

BOOKS

ENGINEERING

Working on a secure base

The Surface of the Earth: an introduction to geotechnical science
by Peter J. Williams
Longman, £9.95
ISBN 0 582 30043 6
Geology for Geotechnical Engineers
by J. C. Harvey
Cambridge University Press,
£12.50 and £5.25
ISBN 0 521 24629 6 and 28862 2
Geotechnical Engineering
by Ian K. Lee, Weeks White and Owen G. Ingles
Pitman, £19.95 and £10.95
ISBN 0 273 01755 1 and 01756 X

The field of geotechnical engineering is cultivated, principally by the civil engineer with substantial support from the geologist. The geologist understands the processes which transform the magma into the clays, silts, sands and rocks which are the working materials of the geotechnical engineer, and he is generally better able to interpret the drift and solid geology, and to make informed comments on aspects of the geological history of a site which are relevant to the civil engineer.

The civil engineer calls upon the geotechnical engineer for expertise in the design of appropriate foundations for structures, design of earth retaining structures, and the design of earth structures. The civil engineer is most frequently associated with structures of steel and concrete, artificial materials manufactured with high-output diesel engines, transient performance effects, and noise and exhaust emissions. A final chapter considers modelling.

The geotechnical engineer works with the disturbed and undisturbed materials generated by the combined operations of all of nature's forces acting on what was originally the magma, but which may have been transformed into materials which are infinitely variable in composition, properties and characteristics. Thus the soil *in situ* is rarely uniform, homogeneous and isotropic. Despite disruption, however, a borehole or test sample is the starting point for analysis and design work.

The *Surface of the Earth*, written by a geographer, is aimed at a very wide readership. Although there is much here that would interest the geologist, and the engineer in a peripheral sense, these sections are pitched at too superficial a level to be of value. However, as many graduates in various disciplines are now having to scan much broader horizons in their search for employment, it may well be that a geographer might find that the engineering and geological slant of some of the chapters aroused some enthusiasm for a career in geotechnical engineering. Although geology is a science and engineers apply scientific concepts to real problems, there is very little science in this work that one would ever apply. Geologists may find some value here, but I suspect that there are more complete and more specialized books available.

Geology for Geotechnical Engineers provides an account of the very basic geology that is essential for the geotechnical engineer in a readable, digestible and informative manner, so that the reader will feel encouraged to extend his study in this field, even though he will find few more advanced works more relevant.

The first three chapters of this book deal with the origin and generation of rocks and soils as we know them, without the jargon that one normally associates with the standard geological text. The Earth and its history are disposed of in only nine pages, which eschew turgid technical debate. The 40-page chapter on rock types is a model of clarity and persuades the reader that this is a fascinating subject which he would wish to pursue in more detail. The least attractive chapter is undoubtedly that on mapping, in which the author has been only moderately successful in putting a difficult subject across.

This book should be required reading for all civil engineering undergraduates. Although it is to some extent superficial, it should arouse interest and awaken enthusiasm. *Geotechnical Engineering* is an excellent text for civil and geotechnical engineering undergraduates, beginning postgraduates, and practising engineers. Many similar texts are quite suitable for teaching, but pretty useless outside the classroom; others are ideal for the practising engineer but little use in the classroom. Here we have a text which is reasonably comprehensive and deals with more than "textbook" soil variability, includes a short but perfectly adequate course in statistics, which emphasizes that here we are not dealing with precise man-made structural materials, but rather the various products of the Earth's deformation. The authors devote a very substantial and outstandingly good chapter to the cornerstone of geotechnical engineering - the whole area of strength and

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deformation - in which they have not allowed themselves to be bogged down in the detailed refinements of triaxial testing.

The chapter which gives me most cause for concern, however, is that devoted to consolidation and settlement, an area in which the engineer is expected to forecast the amount of settlement of a structure and the time that will be required for that settlement to occur. As the forecast can be checked for accuracy by anyone at all familiar with the surveyor's level over the years following construction, there is no hidden safety factor; we are talking in absolutes. This chapter is not at all helpful in this context: although the theories expounded are elegant, abundant and thorough, at the end of the day the engineer is on his own.

Other chapters take the reader logically through the fundamental areas of geotechnical engineering - seepage flow, retaining structures, stability of slopes, foundations and soil treatment. The material covered is up to date and moderately comprehensive, and there is an excellent bibliographical section for the pursuit of any topic.

R. D. Mackey

R. D. Mackey is senior lecturer in civil engineering at the University of Leeds.

"mechanics of fluids" courses in engineering curricula, including a strangely nostalgic section on the drag of a 1955 MGA sports car. From today's advertisements for aerodynamic modern saloons with much smaller drag coefficients, young readers would be surprised to find no mention of air dams, spoilers, and integral bumpers (the relevant references in this chapter are dated 1955 and 1956). The following chapters on heat transfer again cover all the standard textbook analytical material, followed by applying the relations to a car radiator, and well established practice on boiler design (references are dated 1958 and 1959).

The final chapter purports to deal with one of the most important aspects of modern design practice - "evaluation and optimization" - but disappointingly turns out to be a short account of A level calculus of maxima and minima. For example, applied to the maximum efficiency of a windmill. Design optimization of a windmill, however, involves the complex interaction of the wind-profiles, the annual variations, transmission systems, tower structures, bearings, vibration, stress, fatigue, maintenance and so on, that is, a "realistic portrayal of the physical situation" to quote the author.

Perhaps the most surprising omission of all in these days with over a million home computers in Britain and desk-top microcomputers available to most schools and first-year students, is the impact of the computer's power to "model and simulate", to solve many of the problems which the author has deliberately had to simplify in order to solve. In his one short comment on the use of a computer he states that its solutions are only in a numerical form, and that it is much easier to visualize the behaviour of design parameters in a "graphical form, which are not dependent on a computer". There are already many "optimization" interactive programmes available, which produce graphical output, and are part of computer-aided design and manufacture.

The author has attempted to review the subject of thermofluids and relate it to some applications, but most of this material is already available to engineering students in first-year textbooks. From a design teaching point of view the lack of treatment of the "interfaces" between the different decisions which have to be compromised to arrive at even a near-best solution limits its value. The "design" content is descriptive of what has been done in the past, and does not guide the new designer to what he must do to create the future.

Joseph Black

Professor Black is head of the design group and head of the school of engineering at the University of Bath, and a former member of the Design Council (1975-1982).

The chapters on fluid flow contain reviews of the usual first-year

books, which eschew turgid technical debate. The 40-page chapter on rock types is a model of clarity and persuades the reader that this is a fascinating subject which he would wish to pursue in more detail. The least attractive chapter is undoubtedly that on mapping, in which the author has been only moderately successful in putting a difficult subject across.

This book should be required reading for all civil engineering undergraduates. Although it is to some extent superficial, it should arouse interest and awaken enthusiasm.

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BOOKS

ENGINEERING

Bond graphs

Bond Graphs for Modelling Engineering Systems
by Alan Blundell
Wiley, £16.50 and £8.50
ISBN 0 85312 510 4 and 519 8

In the preface to his book Alan Blundell outlines the many areas in which bond graphs have been used to determine the dynamic behaviour of physical and socio-economic systems. He aims to offer a broad treatment of the use of bond graphs, particularly in engineering systems.

The nature of the bond graph as a graphical representation of the power flows within a system by a line or bond, much in the manner of the use of the chemical bond in models of molecular structure, is outlined. Each bond represents the two energy co-variables which together make up the power flow, such as voltage and current for an electrical system or pressure and flow for a hydrostatic one. Of the two co-variables only one can be independent and cause a particular behaviour. This is known as causality - introduced in chapter two as a prelude to the application of what is termed the single loop rule - and owes its origins to Manton's rule from classical control theory.

Unfortunately, although many interesting examples are given of physical systems and their bond graphs, the reader has been left to determine for himself the basic system elements that are used to make up the bond graph and which forms its most attractive feature. At no point in the book is Paynter's tetrahedron of state, which describes the relationship between the power variable, its co-variables (effort and flow) and their integrals (momentum and displacement) and the dynamic energy stores, which may be inertial or compliant, and the energy dissipation given. By the time the book moves into the use of matrices for the analysis of complex systems, the bond graphs given add very little understanding, as for the majority of the examples the bond graph is just given and must be taken at face value. Little attempt has been made to take the reader through the process of forming the bond graph from an understanding of the physics of the system, a facility that is the greatest virtue of the use of bond graphs.

Although some of the examples are interesting, they are invariably either electrical or mechanical, and very little of the interdisciplinary nature of the bond graph is provided. No mention is made of thermal, thermodynamic and fluid mechanical problems in which bond graphs en-

able dynamic models to be developed which would be extremely difficult by other means. Some of the examples - for example, the dynamic behaviour of a Bourdon pressure gauge - are misleading, showing a lack of understanding of the underlying physics. In this example, the Bourdon tube is represented as a piston operating against a damped spring mass system, and the bond graph shown with the piston represented by a transformer acting between the applied pressure at the torque on the pointer. In practice the transformation of the hydrostatic pressure in the tube is first to the tube material in the stress-strain domain, which is then transformed by a non-linear mechanism to the torsional translation of the pointer - a very different system to that described.

There is definitely a need for a new book in the field of bond graphs and their applications to the design and analysis of multivariable systems, which is now a well developed international technique currently being developed for undergraduate teaching. Alan Blundell's book, although it appears at an opportune time, is rather disappointing in not giving a clear view of the potential of bond graphs and their application.

J. E. Sharpe

J. E. Sharpe is lecturer in engineering design at Queen Mary College, London, and a Royal Society/SERC Industrial Fellow at GEC.

Solar energy

Treatise on Solar Energy
Volume 1: Fundamentals of Solar Energy
by H. P. Garg
Wiley, £24.50
ISBN 0 471 10180 X

As its title correctly implies, this book of almost 600 pages is a comprehensive reference text, containing a wealth of data collected with care from the solar energy and heat transfer literature of the past fifty years. The book reflects the long experience of Professor Garg in this field, and his international contacts have certainly helped him to draw together much of the important material which has been written on solar energy in recent years. Though aimed primarily at postgraduate students and researchers in physics and the applied sciences, the book should also serve as a reference for undergraduate project work.

The book is the first volume of a three-volume series, and limits itself almost entirely to the thermal conversion of solar energy with its associated problems of heat transfer. The first chapter is strangely out of keeping with the rest of the book, as it contains a broad review of world energy resources and concludes, urging the reader to develop the use of solar energy because fossil fuel



Southern California Edison's giant 3 megawatt wind turbine at its Wind Energy Center near Palm Springs, California. Taken from *Solar Prospects: the potential for renewable energy* by Michael Flood, published by Willwood House at £6.95.

resources are rapidly running out. Various statistical data are presented on the reserves and utilization of fossil fuels including some unusual data on the less well studied fuels such as firewood in the developing countries. However, much of this introductory material is already looking rather dated, and it will surely not be long before most readers simply ignore it.

The genuine reference text begins in chapter two with a discussion of solar radiation. This includes, after the necessary equations for the computation of solar angles, and so on, an interesting historical account of the controversy which has surrounded measurements of the solar constant. On the measurement of solar radiation itself, there is a brief review of some of the available instruments (with pictures); the specialist, however, might wish to look further than this review for an up-to-date report on this topic. The chapter ends with some tables of solar irradiation for key cities around the world, and includes extra details for the author's home country of India. Chapter three contains most of the material usually taught in undergraduate courses on heat transfer and fluid mechanics, but it is presented here using examples from the solar energy field. It will certainly be useful to have all this material in one text. Chapter four presents detailed optical data for most of the materials which are used in solar collectors and in buildings. Spectral absorptance and transmittance curves are included for a range of plastics as well as for common materials such as glass and water. Radiatively selective surfaces are also discussed and the properties of the more common surfaces tabulated. The chapter concludes with a brief review of the equipment available for measuring the optical properties of materials.

W. B. Gillett

W. B. Gillett is a senior engineer with Sir William Halcrow and Partners (Consulting Engineers), Swindon.

Boundary elements

Boundary Element Methods in Solid Mechanics, with applications in rock mechanics and geological engineering
by S. L. Crouch and A. M. Starfield
Allen & Unwin, £20.00
ISBN 0 04 620010 X

Before the development of computers, only the simplest problems of stress analysis could be solved. By 1965, however, approximate analyses of stress in bodies of irregular shape (domains) were being performed, using finite element methods. This required solving simultaneous equations in unknowns at nodes distributed over the surface or boundary of the domain and throughout its interior. In three-dimensional analysis, reasonably accurate calculations for a domain of relatively simple geometry could involve the solution of over ten thousand simultaneous equations. Even with today's hardware and optimized finite element software, computing cost and system reliability considerations impose severe limitations; and because cost and system requirements increase steeply with problem size, continuing improvement of hardware offers no foreseeable salvation.

Boundary element methods eliminate the unknowns at interior nodes. There are several methods, all requiring the solution of a boundary integral equation. The boundary is represented by elements over each of which is assumed some variation of the unknown function appearing in the integral equation, and simultaneous equations in boundary nodal values are constructed and solved. Until 1970 straight line and flat triangular elements were used and unknown functions were assumed to be constant over each. Large numbers of elements were required to obtain good results, so computing cost was high. Since then, elements which may be curved and over which linear, quadratic and cubic functional variation is assumed have been developed, with the aim of improving computational efficiency. Crouch and Starfield are specialists in displacement discontinuity elements. In their book they describe fictitious loads, displacement discontinuity and direct formulation elements for the analysis of plane strain, and displacement discontinuity elements for three-dimensional analysis of tabular orebodies. They do not consider the general three-dimensional problem. The domain is considered elastic, isotropic and orthotropic, piecewise homogeneous. The elements are straight line segments or flat rectangles, and unknown functions are assumed constant over each, except for direct formulation in which linear variation is also presented.

Although the authors' declared intention is to keep the mathematics simple, they produce complicated algebra by evaluating equation coefficients by analytical rather than numerical integration, and by referring to tangential and normal components of functions rather than their global cartesian components. Fortran programs are presented; these are inelegant and inefficient, but serve to illustrate an introductory text.

However, the book is well written, and care has been taken to eliminate typographical errors in equations. Fortunately, the authors confine themselves to an exposition of techniques they have used rather than attempt to cover the whole field. They are particularly experienced in the analysis of geotechnical problems, and in the final chapter they very effectively demonstrate the use of displacement discontinuities to model joints in rock and the progressive failure of these joints. The book is of interest to all requiring an introductory text, and is of special interest to geotechnical engineers. Those concerned with the pursuit of high computational efficiency, however, must read more widely.

J. O. Watson

J. O. Watson is a lecturer in rock mechanics at Imperial College, London.

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INDUSTRIAL CHEMISTRY ASSISTANT LECTURER

Applicants should have a relevant post graduate degree and a proven ability to use advanced research and analytical techniques. Specific experience in one of the following areas is required:

- CHEMICAL ENGINEERING - MASS TRANSFER OR PROCESS CONTROL
- ORGANIC CHEMISTRY - FINE CHEMICALS PROCESSING OR MICROBIOLOGICAL CHEMICALS PRODUCTION

Candidates must also demonstrate desire and aptitude to teach at both undergraduate and postgraduate levels, to liaise with industry, and to initiate research or assist with existing research programmes.

SALARY SCALE: IR£8,761 - IR£11,835 p.a.
Application material available from the Personnel Office, The National Institute for Higher Education, Limerick, Ireland should be completed and returned by Friday, 13th May, 1983.

BRUNEL UNIVERSITY

Lectureship in Engineering for THE SPECIAL ENGINEERING PROGRAMME

SEP is a prominent and highly successful 'enhanced' undergraduate engineering programme. It is intensive and broad based and has many distinctive features. It attracts the most able and highly motivated school leavers. The Department of Engineering and Management Systems, responsible for SEP, now seeks an additional Lecturer for the SEP 'team'. Applicants must be well qualified, creative, energetic and committed to the SEP approach. For such persons, the post offers outstanding opportunities and a considerable challenge in teaching, and in research. Applications from candidates with qualifications in ELECTRICAL OR ELECTRONIC ENGINEERING, COMPUTING, COMMUNICATIONS, CONTROL, PRODUCTION ENGINEERING, SYSTEMS are particularly welcome. Salary in the Lecturer scale £8,375-£13,505, plus £1,168 London Allowance per annum with USS benefits. Application forms and further particulars from the Personnel Secretary, Brunel University, Uxbridge, Middlesex, UB8 3PH, or telephone Uxbridge 371186, Ext. 49. Closing date: 6th May, 1983.

SEP

Appointments

Universities Fellowships Research and Studentships Polytechnics Colleges of Higher Education Colleges with Teacher Education Colleges and Institutes of Technology	Technical Colleges Colleges of Further Education Colleges and Departments of Art Administration Overseas Adult Education Librarians General Vacancies Industry and Commerce
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Other classifications

Exhibitions Awards Conferences and Seminars Courses	Personal For Sale and Wanted Holidays and Accommodation
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UNIVERSITY OF OXFORD

'New Blood' appointments in Science (including Clinical Medicine and Mathematics)

Applications are invited for the following university lectureships tenable from 1 October 1983.

It is intended that these appointments should be held in conjunction with a college fellowship. Further particulars of the university lectureships, and of relevant college posts, may be obtained from the head of the department indicated in each case, to whom applications (ten typed copies, or one from overseas applicants) should be sent. (Separate application is not necessary for an associated college post.) The closing date for receipt of applications is 11 May 1983.

AGRICULTURAL SCIENCE AND BOTANY: Application of Physical Techniques to Plant Biochemistry. (This is a joint appointment between the two departments, but enquiries and applications should be addressed to: Department of Agricultural Science, Parks Road, Oxford OX1 3PF. Telephone Oxford (0865) 57245.)

BIOCHEMISTRY: Enzymology (with emphasis on Enzyme Mechanisms). (Department of Biochemistry, South Parks Road, Oxford OX1 3QU. Telephone Oxford (0865) 511261.)

CLINICAL MEDICINE: Infectious Diseases and Tropical Medicine. (Nuffield Department of Clinical Medicine, John Radcliffe Hospital, Headington, Oxford OX3 9DU. Telephone Oxford (0865) 817682.)

EXPERIMENTAL PSYCHOLOGY: Brain and Behaviour Research. (Department of Experimental Psychology, South Parks Road, Oxford OX1 3UD. Telephone Oxford (0865) 512251.)

INORGANIC CHEMISTRY: Synthesis of New Inorganic Materials. (Inorganic Chemistry Laboratory, South Parks Road, Oxford OX1 3QR. Telephone Oxford (0865) 53424.)

ENGINEERING SCIENCE: Soil Mechanics. (Department of Engineering Science, Parks Road, Oxford OX1 3PL. Telephone Oxford (0865) 59988.)

MATHEMATICS: (1) Relativity (especially Tensor Theory) (2) Geometry (including Topology). (Mathematical Institute, 24-29 St. Giles, Oxford OX1 3LB. Telephone Oxford (0865) 54295.)

METALLURGY AND SCIENCE OF MATERIALS: Development of New High-strength Cement-based materials for Engineering Applications. (Department of Metallurgy and Science of Materials, Parks Road, Oxford OX1 3PH. Telephone Oxford (0865) 59981.)

OBSTETRICS AND GYNAECOLOGY: Human Fetal Development. (Nuffield Department of Obstetrics and Gynaecology, John Radcliffe Hospital, Headington, Oxford OX3 9DU. Telephone Oxford (0865) 817571.)

ORGANIC CHEMISTRY: (1) Bio-organic Chemistry. (Dyson Perrins Laboratory, South Parks Road, Oxford OX1 3QY. Telephone Oxford (0865) 57609.)

PHYSIOLOGY: Physiology of Excitable Membranes. (University Laboratory of Physiology, South Parks Road, Oxford OX1 3PT. Telephone Oxford (0865) 57451.)

PSYCHIATRY: Cognitive Processes in the Treatment and Prevention of Physical and Psychological Illness. (Department of Psychiatry, Warneford Hospital, Oxford OX3 7JX. Telephone Oxford (0865) 245661.)

SURGERY: Transplantation Immunology. (Nuffield Department of Surgery, John Radcliffe Hospital, Headington, Oxford OX3 9DU. Telephone Oxford (0865) 817688.)

THEORETICAL PHYSICS: Theoretical Elementary Particle Physics. (Department of Theoretical Physics, 1 Keble Road, Oxford OX1 3NR. Telephone Oxford (0865) 53281.)

A MAJOR NEW SERIES FOR STUDENTS OF ELECTRONIC ENGINEERING TUTORIAL GUIDES IN ELECTRONIC ENGINEERING

Series editors: G. G. Bloodworth, York University
A. P. Davy, Southampton University
J. K. Fidler, Essex University

The Tutorial Guides, aimed at first and second year undergraduates, present a new approach to leading electronics engineering by combining the latest integrated circuit methods with more classical fundamental areas of study.

Each text is complete in itself but is linked with others in the series.

- Includes worked examples, graded problems and answers.
- Marginal notes are a key feature of this new series.
- Uses integrated circuit approach.
- Topical coverage.

Lecturers may obtain inspection copies or further information by writing to:
Roger Horton, Inspection Copy Department, Van Nostrand Reinhold (UK), Millers Lane, Wokingham, Berks, RG11 1AY. Tel: (0734) 789485.

VAN NOSTRAND REINHOLD (U.K.)

New Number 2
FEEDBACK CIRCUITS AND OP AMPS
D. H. Horrocks, University College Cardiff
128 pages. Cloth 0 442 30564 0. £10.50
Paper 0 442 30565 9. £5.25

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TRANSISTOR CIRCUIT TECHNIQUES
discrete & integrated
G. J. Ritchie, Essex University
178 pages. Cloth 0 442 30631 1. £10.50
Paper 0 442 30633 8. £5.25

Forthcoming
COMPUTER SYSTEMS, Late '83
TELECOMMUNICATIONS, Early '84
DIGITAL CIRCUITS, Early '84

Polytechnics continued

HUDDERSFIELD POLYTECHNIC
Faculty of Arts
Department of Humanities
RESEARCH ASSISTANT
REF: R31
Applications are invited from good honours graduates in politics or related disciplines for an appointment as Research Assistant, to work on a project entitled 'The Political Economy of British Corporate Investment in the Third World'.
The successful candidate will be expected to register for a higher degree with the Council for National Academic Awards.
Further details and application forms to be returned by 25th April, 1983, are available from the Dean of Research, Office, The Polytechnic, Queensgate, Huddersfield HD1 3DH, Tel: (0484) 22288, Ext. 204.

PLYMOUTH POLYTECHNIC
FACULTY OF TECHNOLOGY
Department of Mathematics, Statistics and Computing
Research Assistantship
Applications are invited from candidates with or expecting to obtain good honours degrees in mathematics or an appropriate engineering discipline for the following research project:
1. Mathematical prediction of the dynamic properties of vulcanised elastomers.
2. The role of Hadamard stability in the theory of rubberlike solids.
Research assistants are expected to register for a CNA A higher degree.
Appointments are for a period of two years with a possibility of a third year (fixed term contract).
Salary: £5,355 to £6,039
Application forms to be returned by Monday, 18th May, 1983 can be obtained from the Personnel Office, Plymouth Polytechnic, Drake Circus, Plymouth, PL4 8AA.

Teeside Polytechnic
Department of Business and Professional Studies
PRINCIPAL ACCOUNTANT
A responsible post based in the accounts department of the Polytechnic following the relocation of the accounts department to the new premises.
Salary: £11,331-£13,850 (week. inc.) £18,018 per annum.
The salary on appointment will be £12,500 per annum.

LECTURER II IN ECONOMICS INCLUDING QUANTITATIVE METHODS
(Re-advertisement)
The ability to apply quantitative methods to economic problems is essential for the study of economics. The successful candidate will be required to teach and supervise students in the areas of microeconomics and econometrics.
Salary: £6,885-£10,172 (efficiency scale) £10,172 (work. inc.) £15,410 per annum.
The salary on appointment will be £8,000 per annum.

LECTURER II IN ECONOMICS INCLUDING QUANTITATIVE METHODS
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Salary: £6,885-£10,172 (efficiency scale) £10,172 (work. inc.) £15,410 per annum.
The salary on appointment will be £8,000 per annum.

Preston Polytechnic
Re-advertisement
Applications are invited for the post of
HEAD OF FASHION
Salary scale: £14,679-£16,365.
Applications received in response to this advertisement will be considered automatically.
Details and application forms, on the reference form, are available from the Office, Preston Polytechnic, PO Box 680, 7th Floor, 100, Victoria Road, Preston, Lancashire PR1 6ST. Closing date: 29th April 1983. H3

Colleges of Technology

Hampshire
FARNBOROUGH COLLEGE OF TECHNOLOGY

HEAD OF DEPARTMENT OF SCIENCE (Grade IV)
Applicants should have at least a good honours degree, and preferably a higher degree, with sound teaching and administrative experience and active research experience.
Further details from: The Staffing Officer, Farnborough College of Technology, Boundary Road, Farnborough, Hants, GU14 6SB. (S.A.E. please).
Closing date: 25th April, 1983.

Colleges of Further Education

EPSOM SCHOOL OF ART AND DESIGN
DEPARTMENT OF FOUNDATION STUDIES
Lecturer II
The School seeks to appoint a successful designer as a Lecturer Grade II in this large and flourishing Department. The Department offers two courses: the one year Pre-BA Foundation Course and a two year DATEC General Art and Design course. The person appointed will have experience of teaching design and the administration of art and design courses at the non-advanced level, and will be responsible to the Head of Department for the Pre-BA course.
Salary within the scale £7,101-£11,268.
No forms: letters of application together with a comprehensive curriculum vitae to be submitted to the Vice Principal, Epsom School of Art and Design, Ashley Road, Epsom, Surrey KT18 5BE within two weeks.
SURREY COUNTY COUNCIL

Plymouth College of Further Education
LECTURER GRADE I
A graduate in Computer Science for Joint Honours Computing/Maths.
Teaching experience desirable. Industrial experience an advantage.
Salary: £5,355-£6,039 (work. inc.) £8,018 per annum.
Application form and particulars (S.A.E. please) available from the Registrar, Plymouth College of Further Education, Plymouth, PL4 8AA. Telephone: (07593) 44444.
Closing date: 29th April 1983.

Personal

Teesside Polytechnic
Department of Mathematics and Statistics
LEA RESEARCH ASSISTANT
The Computational Mathematics Section, Teesside Polytechnic, is seeking a research assistant to assist in the development of a research project in the area of mathematical modelling.
Salary: £5,355-£6,039 (work. inc.) £8,018 per annum.
Application form and particulars (S.A.E. please) available from the Registrar, Teesside Polytechnic, Middlesbrough, Cleveland TS1 1BA. Telephone: (01642) 412121.
Closing date: 29th April 1983.

Examiners
Royal Society of Arts Examinations Board
Applications are invited for the following:
DIPLOMA IN LANGUAGES FOR INTERNATIONAL TRADE
Chief Examiner for this examination designed to test appropriate language skills at a high level. Preferably a native speaker of French with experience of international trade and background in education. H27
Closing date for applications: 25th April 1983. For further details: The Principal, King Alfred's College, Winchester, SO22 4NR.

King Alfred's College Winchester
RESEARCH ASSISTANT
Required for two years. Research Assistant in seventeenth century history and literature. The Assistant will be required to register for an M.Phil. (C.N.A.A.) on an approved inter-disciplinary topic, and be supervised by the College; and to teach on the College's MA programme (about one-third). Salary N.J.C. Scale, Research A from £4,680.
Closing date for applications: 25th April 1983. For further details: The Principal, King Alfred's College, Winchester, SO22 4NR.

Colleges of Higher Education

Dorset Institute of Higher Education
Head of Department of Business Studies (Grade VI)
Salary £15,867-£17,480 Ref: BS/TH
Head of Department of Communication and Media (Grade VI)
Salary £15,867-£17,480 Ref: CM/TH
Head of Department of Finance and Law (Grade VI)
Salary £15,867-£17,480 Ref: FL/TH
Head of Department of Tourism, Recreation and Field Sciences (Grade V)
Salary £14,679-£16,305 Ref: TRFS/TH
The above posts are newly created as a result of a recent review of departmental structure and the retirement of two heads of department.
Principal Lecturer in Information Technology
Ref: IT/TH
Principal Lecturer in Computer Aided Engineering
Ref: CAE/TH
Both of the above posts are offered on a three year contract basis.
Application forms and further details of the above posts are available from the Director (TH1), Dorset Institute of Higher Education, Weymouth Road, Weymouth, Dorset BH12 8BB, (see please) Tel: Bournemouth (0202) 524111, Ext. 389.
The closing date for all posts is Friday, 29th April, 1983.

KING ALFRED'S COLLEGE WINCHESTER
Applications are invited from WELL-QUALIFIED GRADUATES with appropriate and recent experience for the following posts from 1st September 1983:
1. Special Education and Rehabilitation
2. Primary Education - Early Years
3. Primary Education - 7-12 years
4. Teacher-Fellow - Multicultural Education (one or two-year appointment)
5. Teacher-Fellow - Children with Special Needs (one or two-year appointment)
6. Communication and Learning Resources (two-year appointment)
7. Computer Programmer (one or two-year appointment)
8. Part-time Lectureship in English (0.5) to teach on B.A. Honours course. Scholarship in the field of Renaissance/seventeenth century and/or nineteenth century studies particularly (one year appointment).
9. Research Assistant, for two years, in seventeenth century history and literature. The Assistant will be required to register for an M.Phil. (C.N.A.A.) on an approved inter-disciplinary topic, and be supervised by the College; and to teach on the B.A. Honours degrees (about one-third). Salary N.J.C. Scale, Research A from £4,680.
Appointments to posts 1-6 and 8 will be made at Lecturer/Senior Lecturer level (£6,855-£12,816) according to qualifications and experience.
Computer Programmer's salary scale: £6,873-£9,231.
Closing date for applications: 29th April 1983.
For further details: The Principal, King Alfred's College, Winchester SO22 4NR.

University of Kent
CANTERBURY FACULTY OF SOCIAL SCIENCES
Applications are invited for the post of Lecturer in Social Sciences, to be based in the Department of Social Sciences, Canterbury.
The successful candidate will be required to teach and supervise students in the areas of sociology, anthropology, and social psychology.
Salary: £6,885-£10,172 (efficiency scale) £10,172 (work. inc.) £15,410 per annum.
The salary on appointment will be £8,000 per annum.
Application form and particulars (S.A.E. please) available from the Registrar, University of Kent, Canterbury, Kent CT1 1TA. Telephone: (01843) 242424.
Closing date: 29th April 1983.

Colleges of Higher Education continued

Division of Computing Information Technology
Principal Lecturer Senior Lecturer/Lecturer II/Lecturer I
Additional posts are available due to expansion of courses in Information Technology. Candidates should be graduates (or equivalent) with experience of programming in one or more languages (e.g. PASCAL, COBOL, ASSEMBLER) together with expertise in areas such as Operating Systems, Graphics, Data Processing.
Computing staff teach on a range of industry linked Higher Diploma sandwich courses, part-time BCS courses and specialist short courses. Salaries inclusive of area allowance within the ranges:
• Principal Lecturer £12,162-£15,249
• Senior Lecturer £10,404-£13,047
• Lecturer II £7,086-£11,253
• Lecturer I £5,586-£9,498
(Scales under review)
Send SAE for further details and an application form to be returned within two weeks of the date of this advertisement to The Vice Principal, Slough College of Higher Education, Wellington Street, Slough SL1 1YG.
Berkshire is an equal opportunities employer.

Slough College
Head of Department of Accountancy and Business
Grade VI £16,098-£17,721 (Scale under review)
required for September 1983 for this department to be formed by the amalgamation of the departments of Accountancy and of Business Studies and Law, whose Heads are both retiring. Full-time, part-time and sandwich courses currently include ACCA (Final), ICMA (Prof.), BEC HND/C, ICMA and Banking Diploma.
For further information and application forms send SAE to The Vice Principal, Slough College of Higher Education, Wellington Street, Slough SL1 1YG. Completed forms must be returned by 29 April 1983.
Berkshire is an equal opportunities employer.

WESTMINSTER COLLEGE OXFORD
LECTURER II IN MUSIC AND EDUCATIONAL STUDIES
(Re-advertisement)
Applications are invited from suitably qualified candidates for the above appointment commencing 1st September, 1983. The College is seeking a widely interested and skilled musician to develop the musical life of the College in all its facets. The successful candidate will be responsible for designing and teaching the music courses offered in the Subsidiary Subject programme of the BEd., and the professional courses followed by BEd. (4-year Honours) and PGCE students intending to teach in Junior or Middle schools. It is hoped to appoint a person with commitment to the development of music in the Junior school. A contribution will be expected to the College's extensive in-service programme.
The closing date for receipt of applications is the 28th April, 1983.
Further particulars may be obtained from the Principal's Secretary, Westminster College, North Hinksey, Oxford OX2 8AT (Tel: (0865) 247844) to whom all applications together with full curriculum vitae, and the names, addresses and telephone numbers of three referees should be sent.

WESTMINSTER COLLEGE OXFORD
LECTURER II IN THEOLOGY AND RELIGIOUS STUDIES
Applications are invited from suitably qualified candidates for the above appointment which will run for a three-year fixed term from 1st September, 1983. The successful applicant will be responsible for teaching in the College's BA (Theology) and BEd. programmes, principally in the areas of New Testament Studies, Hermeneutics, and Contemporary Theology. Experience of teaching in school would be an advantage.
Applicants should have good academic qualifications, including a Higher Degree and/or relevant research experience.
Further particulars may be obtained from the Principal's Secretary, Westminster College, North Hinksey, Oxford OX2 8AT (Tel: (0865) 247844) to whom all applications together with full curriculum vitae and the names, addresses and telephone numbers of three referees should be sent.
The closing date for receipt of applications is the 29th April, 1983.

DONCASTER METROPOLITAN INSTITUTE OF HIGHER EDUCATION
DEPARTMENT OF DESIGN
LECTURER II IN COMMUNICATION STUDIES
Applications are invited for the above post to commence duties as soon as possible.
The person appointed should possess a degree or professional qualification and will be required to lead and co-ordinate the communication and media studies, and professional practice across a variety of DATEC Graphics and Fashion Design courses. Above all, the person will need a creative approach, enthusiasm, commitment and an ability to fit in with a hard-working teaching team.
Industrial experience would be an asset and a teaching qualification an added advantage.
Salary Scale: Lecturer II £6,885-£11,022.
Placing on the scale is dependent on qualifications and experience.
Please send stamped addressed envelope for particulars and application form to:
Staffing Section
Doncaster Metropolitan Institute of Higher Education
Waterdale, Doncaster DN1 3EX
Closing date 10 days from date of this publication.

Slough College
Head of Department of Accountancy and Business
Grade VI £16,098-£17,721 (Scale under review)
required for September 1983 for this department to be formed by the amalgamation of the departments of Accountancy and of Business Studies and Law, whose Heads are both retiring. Full-time, part-time and sandwich courses currently include ACCA (Final), ICMA (Prof.), BEC HND/C, ICMA and Banking Diploma.
For further information and application forms send SAE to The Vice Principal, Slough College of Higher Education, Wellington Street, Slough SL1 1YG. Completed forms must be returned by 29 April 1983.
Berkshire is an equal opportunities employer.

Essex County Council
Chelmer-Essex Institute of Higher Education
SENIOR LECTURERS AND LECTURER GRADE II IN COMPUTER STUDIES
Required for September 1984. The Institute has been selected by the Government as a centre for the expansion of Computer Studies courses at National Diploma level.
Applicants should have specialist knowledge in the following areas: Information Systems, Data Processing, Systems Applications, Systems Programming, Systems Analysis, Systems Design, Systems Development, Systems Maintenance, Systems Support, Systems Training, Systems Evaluation, Systems Research, Systems Innovation, Systems Development, Systems Maintenance, Systems Support, Systems Training, Systems Evaluation, Systems Research, Systems Innovation.
Salary: Senior Lecturer £10,404-£13,047 (work. inc.) £15,410 per annum. Grade II £7,086-£11,253 per annum.
Application forms and further details available from the Institute Secretary, Chelmer-Essex Institute of Higher Education, Victoria Road, South Chelmsford, CM1 1LJ. Extension 88. H3

DORSET INSTITUTE OF HIGHER EDUCATION
MICROELECTRONICS EDUCATION PROGRAMME
LII/Senior Lecturer in Information Systems
Applications are invited for the above post to commence duties as soon as possible. The successful candidate will be required to lead and co-ordinate the microelectronics education programme across a variety of DATEC Graphics and Fashion Design courses. Above all, the person will need a creative approach, enthusiasm, commitment and an ability to fit in with a hard-working teaching team.
Industrial experience would be an asset and a teaching qualification an added advantage.
Salary Scale: Lecturer II £6,885-£11,022.
Placing on the scale is dependent on qualifications and experience.
Please send stamped addressed envelope for particulars and application form to:
Staffing Section
Doncaster Metropolitan Institute of Higher Education
Waterdale, Doncaster DN1 3EX
Closing date 10 days from date of this publication.

County of Avon
Bath College of Higher Education
LECTURER GRADE II IN PRIMARY EDUCATION
1) PRIMARY EDUCATION
2) PSYCHOLOGY
Candidates should hold a degree or equivalent qualifications and have good school experience. Further details and application forms available from the Principal's Secretary, Bath College of Higher Education, Bath BA1 1BN. Tel: (01225) 333333. Closing date: 29th April 1983.

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Basing College of Higher Education
TWO LECTURERS GRADE I IN SPANISH
The School of Language Studies requires a lecturer with native or near native competence in Spanish to teach Spanish language and economics of Spain and Latin America (with special reference to Mexico) on the CNA A BA in Applied Economics and the College Diploma in Hispanic Studies.
The person appointed is likely to have language teaching experience and qualifications in Economic Geography.
The School of Business Administration requires a member of staff with near perfect bilingual competence in Spanish and English, and a knowledge of the Spanish economy (Travel and Tourism).
The person appointed is likely to have experience in communicative language teaching and be acquainted with Functional/Notional language teaching. Previous experience of HEC and/or courses is highly desirable.
Both posts are tenable from 1st September 1983.
Salary: £11,331-£13,850 (work. inc.) £18,018 per annum.
Application forms and further details available from the Staffing Officer, Basing College of Higher Education, Basing Road, Basing, Hampshire RG24 0AA. Tel: (01256) 84111. H3

County of Avon
Bath College of Higher Education
PRINCIPAL LECTURER AND LECTURER GRADE II IN HOME ECONOMICS
Applications are invited for the above appointments as Principal Lecturer and Lecturer Grade II in Home Economics. The successful candidates will be required to lead and co-ordinate the home economics education programme across a variety of DATEC Graphics and Fashion Design courses. Above all, the person will need a creative approach, enthusiasm, commitment and an ability to fit in with a hard-working teaching team.
Industrial experience would be an asset and a teaching qualification an added advantage.
Salary Scale: Lecturer II £6,885-£11,022.
Placing on the scale is dependent on qualifications and experience.
Please send stamped addressed envelope for particulars and application form to:
Staffing Section
Doncaster Metropolitan Institute of Higher Education
Waterdale, Doncaster DN1 3EX
Closing date 10 days from date of this publication.

County of Avon
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Industrial experience would be an asset and a teaching qualification an added advantage.
Salary Scale: Lecturer II £6,885-£11,022.
Placing on the scale is dependent on qualifications and experience.
Please send stamped addressed envelope for particulars and application form to:
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Doncaster Metropolitan Institute of Higher Education
Waterdale, Doncaster DN1 3EX
Closing date 10 days from date of this publication.

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Technical Colleges

KEIGHLEY
TECHNICAL
COLLEGEAPPOINTMENT
OF PRINCIPAL

Applications are invited for the above post to succeed Mr J. Longden O.B.E. who is retiring at the end of the Summer term 1983. The college is in Group 5 (salary range, currently £18,657 to £19,611), is situated in the centre of Keighley and is organised into five departments:

- Business & Management Studies.
- Community Education and Staff Development.
- Construction Industries.
- Engineering.
- General Education, Science and Computing.

Further information and application forms can be obtained from the Clerk to the Governors, Keighley Technical College, Cavendish Street, Keighley, BD21 3DF. Completed forms to be returned by 6th May 1983.

City of Bradford Metropolitan Council

We are an equal opportunities employer and welcome applications from candidates of any age, sex, race or disability without prejudice.

DURHAM COUNTY COUNCIL
CONSETT TECHNICAL COLLEGE

(Group 4)

POST OF PRINCIPAL

Applications are invited from persons with suitable qualifications for the post of Principal of Consett Technical College. The college is at present organised in two departments namely, Business and General Studies, and Technology.

The Committee is looking for a person with administrative and organising ability who has broadly based experience in technical and further education.

The college is placed in Group 4 under the Durham Further Education Committee's Report and the salary attached to the post will be at a fixed point within the range for a Group 4 Principal.

Further details and application forms, returnable by 3rd May, 1983 from the Director of Education, County Hall, Durham DH1 6UJ on receipt of a stamped addressed foolscap envelope.

Courses

Oxford Centre for Postgraduate Hebrew Studies
THE OXFORD PROGRAMME
IN YIDDISH

1-26 August 1983

dedicated to the memory of Aaron Yanovsky (1904-1980)

An intensive one-month course in Yiddish language and literature

Courses offered: Yiddish I (elementary), Yiddish II (intermediate), Yiddish III (higher intermediate) and Yiddish IV (advanced). Emphasis on the acquisition and development of active language skills, accompanied by extensive readings from the works of Yiddish literature and an introduction to the history of Yiddish language and literature.

Activities: Afternoon workshops, language laboratory, guest lectures, folk music sessions, pre-World War II Yiddish film and social gatherings. Accreditation: Upon successful completion of the appropriate level course, participants are awarded a Certificate of Completion by the Oxford Centre for Postgraduate Hebrew Studies.

Faculty: Professor Eugene Greenfield, McGill University (Montreal); Dr. David Katz, Oxford Centre for Postgraduate Hebrew Studies; Ms. Elinor Robinson, Columbia University (New York); Mr. Christopher Hudson, Wolfson College (Oxford); Lecturer in Yiddish Folk Music: Dr. Ruth Rubin (New York).

Tuition fee: £150. Full time university students: £100. Enquiries to: JEAN NIGHTINGALE, Administrative Director, The Oxford Programme in Yiddish, Oxford Centre for Postgraduate Hebrew Studies, 45 St Giles', Oxford OX1 3LW. Tel: Oxford (0865) 511699.

Scholarships

Scholarships and
Training Assistance
GLAMORGAN FURTHER
EDUCATION TRUST FUND

The Mid Glamorgan County Council is the trustee of the Glamorgan Further Education Trust Fund.

The Fund is intended to benefit:

- (i) Pupils who have for not less than two years at any time attended a County Secondary School in the area of the former Administrative County of Glamorgan or Howell's Glamorgan County School, Cardiff, provided that candidates who have attended Howell's Glamorgan County School have been resident for not less than two years while a pupil at the School, in the former Administrative County of Glamorgan.
- (ii) Girl pupils who have for not less than two years at any time attended any maintained Primary School in the Parishes of Llantrisant, Pontypridd, Penyrh, Llanabon, Llanelli, Fardre, Eglwysilan and that part of the Parish of Llanwern comprising the former Ynysybwl Ward of the former Mountain Ash Urban District with a preference for such girls who while in attendance at any such school were resident in the Parish of Eglwysilan.

The Fund is to be applied with the following objects in the case of pupils falling within categories (i) and (ii) above:

- (a) Exhibitions tenable at any training college for teachers, university or other institution of further (including professional and technical) education, approved by the Council, to be awarded under rules made by the Council, including rules as to the value and period of tenure of the exhibitions, and the qualifications, and method of ascertainment and selection of candidates;
- and with the following additional objects in the case of pupils falling within category (i) above only:
- (b) Financial assistance, tuition, clothing, tools, instruments or books to enable beneficiaries on leaving school, university or other educational establishments, to prepare for, or to assist their entry into a profession, trade or calling.

Application forms and copies of the rules governing the making of awards may be obtained from a prospective applicant's District Education Office, in the case of prospective applicants from Mid Glamorgan. Prospective applicants from South Glamorgan may apply to the Director of Education, Education Offices, Kingsway, Cardiff, CF1 4JG. Prospective applicants from West Glamorgan may apply to the Director of Education, County Hall, Swansea, SA1 3SN. Postal requests should be marked "Glamorgan Further Education Trust Fund-Forms" and accompanied by a stamped self-addressed envelope.

Applicants should note that the rules provide that awards will not be made in respect of courses for which the applicant will be on paid secondment or will receive a mandatory grant or a grant from the Department of Education and Science or for which an applicant may expect to receive a discretionary grant from the Local Education Authority, unless there are exceptional or unusual circumstances relevant to the application.

The closing date for applications for awards tenable or payments to be made during the academic year 1983-84 and beyond is 31st May, 1983.

K. S. HOPKINS
Director of Education

County Hall,
Cathays Park,
CARDIFF, CF1 3NF.

Overseas

UNIVERSITY OF CAPE TOWN
Senior Lecturers in
Electrical and
Electronic Engineering

Applications are invited for the above posts for appointment on a full-time basis.

Specialised in either (a) power systems or (b) signal and control systems is required, and the incumbents will be expected to teach undergraduate and postgraduate level and to undertake research. Appointment will be made according to qualifications and experience on the salary scale R16 557 to R24 045 per annum, in addition a service bonus of nearly one month's salary is payable annually.

Staff benefits include a 75% remission of tuition fees for dependants of UoC, generous study leave privileges, a housing subsidy scheme subject to State regulations, pension fund, medical aid and group life insurance.

Applicants should submit a curriculum vitae stating present salary, research interests and publications, the date duty could be assumed, and the names and addresses of three referees whom the University may wish to contact.

Further information should be obtained either from Miss J. Lloyd, SA Universities Office, Chichester House, 278 High Holborn, London WC1V 7HE, or from the Registrar (Attention: Appointments Office), University of Cape Town, Private Bag, Rondebosch, 7700, South Africa, by whom applications (quoting ref. no. E/332) should be received not later than 31 May 1983.

The University's policy is not to discriminate on the grounds of sex, race or religion.

Further information on the implementation of this policy is obtainable on request.

UNIVERSITY OF CAPE TOWN

Assistant Lectureship
in English

Applications are invited from suitably qualified persons for the above post. Appointment will take effect on 1 July 1983 or as soon as possible thereafter.

There are opportunities in the Department to teach the usual topics in English Language and Literature. Applicants should state their areas of special interest, but should be prepared to teach in a reasonably wide field.

The closing date for applications is 30 April 1983.

Assistant Lectureships in
Romance Studies
(French Language and Literature)

Applications are invited for the above posts vacant from 1 January 1984.

Applicants should possess good academic qualifications in French and be equipped to teach both the language, especially to beginners and first-year students, and a fair range of French literature.

The closing date for applications is 9 May 1983.

Assistant Lectureship in
Romance Studies
(Italian Language and Literature)

Applications are invited for the above post vacant from 1 January 1984.

Applicants should possess good academic qualifications in Italian and be equipped to teach both the language and a fair range of Italian literature.

The closing date for applications is 9 May 1983.

General

The appointments for all the above posts will be made according to qualifications and experience on the salary scale R9 696 to R24 045 per annum.

The University offers excellent staff benefits including an annual service bonus of nearly one month's salary, generous research leave, travel and removal expenses, an attractive housing subsidy subject to State regulations, 75% remission of tuition fees for dependants, a good pension fund, medical aid and group life insurance.

Applicants should submit a curriculum vitae stating present salary, research interests and publications (if any), the date on which duty could be assumed, and the names and addresses of three referees whom the University may wish to contact.

Further information should be obtained either from Miss J. Lloyd, SA Universities Office, Chichester House, 278 High Holborn, London WC1V 7HE, or from the Registrar (Attention: Appointments Office), University of Cape Town, Private Bag, Rondebosch, 7700, South Africa, by whom applications (quoting ref. no. E/330) should be addressed. Applications must be submitted in English.

The University's policy is not to discriminate on the grounds of sex, race or religion.

Further information on the implementation of this policy is obtainable on request.

NATIONAL UNIVERSITY OF SINGAPORE
DEPARTMENT OF BUSINESS ADMINISTRATION

Applications are invited for teaching appointments ranging from Lectureships to Associate Professorships in the Department of Business Administration from candidates who must possess a PhD degree. Appointments will be made to fill vacancies in each of the following groups:

- (1) Finance and Economics
- (2) Business Policy
- (3) Marketing and International Business
- (4) Organisational Behaviour
- (5) Decision Sciences

The Department of Business Administration conducts courses to over 1,000 full-time students reading for the Bachelor of Business Administration degree. Selected staff may also participate in the teaching of the Master of Business Administration (MBA) degree course conducted by the School of Management. The department is also active in executive education and consultancy work.

Gross annual emoluments range as follows:
Lecturer: S\$27,510-57,040
Senior Lecturer: S\$51,870-84,600
Associate Professor: S\$74,030-101,970
(S\$T21 = S\$3.04 approximately)

The "commencing" salary will be dependent upon the candidate's qualifications, experience and the level of appointment offered. Leave and medical benefits are provided. Under the University's Academic Staff Provident Fund Scheme, the staff member contributes at the present rate of 23% of his salary subject to a maximum of S\$600 p.m., and the University contributes 22% of his monthly salary. The sum standing to the staff member's credit in the Fund may be withdrawn when the staff member leaves Singapore/Malaysia permanently.

Other benefits include a 75% remission of tuition fees for dependants of UoC, generous study leave privileges, a housing subsidy scheme subject to State regulations, pension fund, medical aid and group life insurance. Appointment will be made according to qualifications and experience on the salary scale R16 557 to R24 045 per annum, in addition a service bonus of nearly one month's salary is payable annually.

Applicants should submit a curriculum vitae stating present salary, research interests and publications, the date duty could be assumed, and the names and addresses of three referees whom the University may wish to contact.

Further information should be obtained either from Miss J. Lloyd, SA Universities Office, Chichester House, 278 High Holborn, London WC1V 7HE, or from the Registrar (Attention: Appointments Office), University of Cape Town, Private Bag, Rondebosch, 7700, South Africa, by whom applications (quoting ref. no. E/332) should be received not later than 31 May 1983.

The University's policy is not to discriminate on the grounds of sex, race or religion.

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Overseas continued

UNIVERSITY OF CAPE TOWN

Lecturer in Music

Applications are invited for appointment on a full-time basis to the above post in the South African College of Music.

The successful candidate will be expected to teach Harmony & Counterpoint to first and second year students (thus all students for 5 mus or diploma courses will pass through the successful applicant's classes) and will also be expected to take part in work connected with the college in other ways: the primary necessity is, however, in the area of Harmony & Counterpoint.

Applicants should be musicians who have had a varied training in music of tertiary level and there may also be some supervision of postgraduate work.

The successful applicant will be expected to take an active part in the life of the College of Music and if a performer will be expected to do some performing, supervise Ensemble, etc. though this is not a prerequisite for appointment.

Appointments, depending on qualifications and experience, will be made on the salary scale R16 557 to R24 045 per annum.

Assistant Lecturers
in Classics

Applications are invited for the above posts vacant from 1 January 1984.

Experience in teaching Latin to beginners, a knowledge of Legal Latin and/or a special interest in Roman History will be a recommendation. The appointments will be made according to qualifications and experience on the salary scale R9 696 to R24 045 per annum.

General

The University offers excellent staff benefits including an annual service bonus of nearly one month's salary, generous research leave, travel and removal expenses, an attractive housing subsidy subject to State regulations, 75% remission of tuition fees for dependants, a good pension fund, medical aid and group life insurance.

Applicants should submit a curriculum vitae stating present salary, research interests and publications (if any), the date on which duty could be assumed, and the names and addresses of three referees whom the University may wish to contact.

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Further information on the implementation of this policy is obtainable on request.

UNIVERSITY OF CAPE TOWN

Associate Professor,
Senior Lecturer and
Lecturer in
Mathematical Statistics

Applications are invited for the above posts for appointment from 1 July 1983 or as soon as possible thereafter.

Preference will be given to applicants whose main interests are either in Mathematical Statistics or Operations Research. The successful candidate will be required to teach at both the undergraduate and postgraduate level and should hold a postgraduate degree in one of the above fields.

Appointments will be made according to qualifications and experience on the following salary scales:
Associate Professor: R21 237 to R36 824 045 x 1.035-R28 110 per annum.
Senior Lecturer: R16 557 to R36 824 045 per annum.
Lecturer: R12 657 to R24 045 x 1.035-R22 173 per annum.

In addition a service bonus of nearly one month's salary is payable annually.

Staff benefits include a 75% remission of tuition fees for dependants of UoC, generous study leave privileges, a housing subsidy scheme subject to State regulations, pension fund, medical aid and group life insurance.

Applicants should submit a curriculum vitae stating present salary, research interests and publications, the date duty could be assumed, and the names and addresses of three referees whom the University may wish to contact.

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The University's policy is not to discriminate on the grounds of sex, race or religion.

Further information on the implementation of this policy is obtainable on request.

UNIVERSITY OF CAPE TOWN

Senior lecturer
in Hebrew

Applications are invited for the above post vacant from 1 January 1984.

The successful candidate must be able to teach Hebrew Bible at all levels and will also be expected to offer courses in other Hebrew subjects. Breadth of experience and competence over and above specialist proficiency in the Biblical field will therefore be considered advantageous. In particular special interest in and a knowledge of Jewish history will be welcomed. It will be expected that candidates should be able to teach in Hebrew as well as English.

Appointments will be made according to qualifications and experience on the salary scale R16 557 to R36 824 045 per annum.

Applicants should submit a curriculum vitae stating present salary, teaching and other relevant experience, research interests and publications, when available if appointed and the names and addresses of three referees whom the University may wish to contact. The closing date for applications is 16 May 1983.

Lecturer in Drama

Applications are invited for the above post vacant from 1 July 1983.

Applicants should be qualified to teach in areas such as voice and speech training, verse speaking, acting techniques and styles, the history, theories and literature of drama and the theatre, the theories and principles of normal speech and verbal communication.

Experience of work in the theatre and of teaching will be a recommendation, as will some knowledge of and skill in other performance media. The ability to direct plays with students is essential.

Appointments will be made according to qualifications and experience on the salary scale R16 557 to R36 824 045 per annum.

Applicants should submit a curriculum vitae stating present salary, the date duty could be assumed and the names and addresses of three referees whom the University may wish to contact. The closing date for applications is 28 April 1983.

General

Staff benefits include an annual bonus of nearly one month's salary, generous research leave, travel and removal expenses, a housing subsidy subject to State regulations, a 75% rebate on tuition fees for dependants, pension fund, medical aid and group life insurance.

Further information should be obtained either from Miss J. Lloyd, SA Universities Office, Chichester House, 278 High Holborn, London WC1V 7HE, or from the Registrar (Attention: Appointments Office), University of Cape Town, Private Bag, Rondebosch, 7700, South Africa, by whom applications (quoting ref. no. E/335) should be addressed. Applications must be submitted in English.

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THE HEBREW UNIVERSITY
OF JERUSALEMFaculty of Sciences and Mathematics
DEPARTMENT OF SCIENCE TEACHING

Invites applications for two Faculty positions, one in chemical education, particularly at Secondary School and undergraduate level, and one in the use of computers as learning and teaching aids.

The level of appointment will be according to qualifications and experience, on the regular academic scale (Lecturer, Senior Lecturer, Assistant Professor, Professor). Candidates should write to Prof. E. Mendonza, Department of Science Education, The Hebrew University of Jerusalem, 91804 Jerusalem, Israel enclosing a full curriculum vitae, list of publications and names of three referees, before 8th May, 1983.

The Department of Science Teaching in the Faculty of Sciences trains students who already have a B.Sc. degree in one of the sciences, for M.Sc. and Ph.D. degrees in Science Education.

The Department consists of 6 full-time Faculty members and 5 part-time members who devote the rest of their time to research in their own scientific fields. The Department is engaged in research in the fields of mathematical, physical, chemical and biological education, in problems of evaluation of educational misconceptions and of difficulties of learning scientific concepts experienced by children of families originating in non-European cultures.

Applicants should submit a curriculum vitae stating present salary, research interests and publications, the date duty could be assumed, and the names and addresses of three referees whom the University may wish to contact.

Further information should be obtained either from Miss J. Lloyd, SA Universities Office, Chichester House, 278 High Holborn, London WC1V 7HE, or from the Registrar (Attention: Appointments Office), University of Cape Town, Private Bag, Rondebosch, 7700, South Africa, by whom applications (quoting ref. no. E/336) should be received by 31 May 1983.

The University's policy is not to discriminate on the grounds of sex, race or religion.

Further information on the implementation of this policy is obtainable on request.

DESIGNATED SCHOOLS BOARD
MALAWI

Applications are invited for the post of:

EXECUTIVE SECRETARY
TO THE DESIGNATED
SCHOOLS BOARD

The post entails overall supervision of the administration of the Board, organisation of the appointment of teaching and administrative staff within the Schools and keeping a close working relationship with the Ministry of Education and Culture, and the Headmasters of the five schools administered by the Board.

Applicants should be over 40 years of age and have qualifications and/or experience in at least one of the following fields:

- (a) Education, Educational Administration or related experience.
- (b) Business Administration, i.e. have held a senior post in commerce or managed a business.

A knowledge of accounting would be an advantage but is not essential. Salary will be according to qualifications and experience; appointment on contract includes terminal gratuity and leave pay.

Applications should be addressed to:
The Chairman of the General Purpose Committee,
Designated Schools Board,
P.O. Box 5599, Lilongwe, Malawi.

WAIT

Western Australian
Institute of Technology

Limited Term Appointments
SENIOR TUTOR/LECTURER
PHYSICS
(Several Positions)

Applications are invited for several teaching/research positions within the Department of Applied Physics. Postgraduate qualifications in physics and a commitment to teaching at undergraduate level required. Preference may be given to applicants with professional/teaching experience in radiation physics, image processing and computer-aided instructional techniques. Experience in teaching secondary school physics also an advantage.

Appointees expected to join a current research group, i.e. in meteorology, hydrology, oceanography, environmental remote sensing, seismology, isotope studies, mineralogy or materials science.

Renewable one-year appointment available from 1st July 1983. (Ref 568)

Salary ranges: Lecturer \$22,430 - \$29,467. Senior Tutor \$19,333 - \$22,148.

Limited Term Appointments are available initially for one to three years and to an eventual maximum of five years.

Conditions include rates for appropriate family plus assistance with removal expenses.

Applicants: Details including two referees and addresses of three referees should be submitted to the Human Resources Officer, WAIT, 115 Street, London WC2R 0AJ, from whom further information may be obtained. When applying please quote Ref No and Code H22.

UNIVERSITY OF MALAWI
DEPARTMENT OF
MICROBIOLOGY AND PLANT
PATHOLOGYPIETERMARITZBURG
- SOUTH AFRICA

Applications are invited from suitably qualified persons regardless of sex, religion, race, colour or national origin, for appointment to the post of:

LECTURER IN
MICROBIOLOGY

The minimum qualification required is an M.Sc. degree. A knowledge of, or experience in, industrial and applied microbiology will be a strong recommendation.

The salary will be in the range: R12,857-R22,173 per annum. The commanding salary notch will be dependent on the qualifications and/or experience of the successful applicant.

In addition, an annual service bonus of 93% of one month's salary is payable, subject to Treasury regulations.

Applicants should submit a curriculum vitae stating present salary, research interests and publications, the date duty could be assumed, and the names and addresses of three referees whom the University may wish to contact.

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Advice to an heir apparent from an old hand

From Christopher Price, M.P.



HOUSE OF COMMONS
LONDON SW1A 0AA
01-219 3437

PLEASE FORWARD
Mr David Hancock,
Permanent Secretary Apparent,
Department of Education and Science,
Elizabeth House,
York Way,
London SE1

My dear David,
I hope you won't mind my writing to you like this, but this is my last column before I start when you take up your job, and I do think it's sensible to offer advice early. I was a little late in writing to your predecessor seven years ago (in the humblest *Times Educational Supplement*) since I had to resign from being PPS in the department before I could properly do so, and Sir James was a little slow in galvanizing Mrs Williams into any sort of positive direction on anything. But then perhaps the task was a hopeless one - it would be a waste of time to blame him. Any meeting of minds between a wee Free Scientist and Catholic Quaker Fabian - and though I suspect yours and Keith's will be no easier, I'll have some grandfatherly words of advice about that in a moment.

My other excuse is that I'm snowed up in a Channel Island tax haven attending the NUT conference, where the only redeeming feature is a very civilized assistant secretary of yours, who's escaped from the Department of Employment and says he's in charge of teachers' pay. So I have time on my hands; and it brings me to your functionaries.

First your functionaries. Though they've been much rubbished (from time to time by my Select Committee) they're not a bad lot. Several are called Thompson, and really rather good; then there's Halsey (not the Oxford don, who's a bit more ebullient and was once the economic adviser to the DES) and Nick Stuart, who you've probably met. He's very good and did much to rescue Miss Brown, about whom, also, more to me in a second. Then there's a Mr Ulrich, whom you'll find tremendously English, and even what one might call "laid back". Quite unlike his fellow Wykehamites, Richard Bird, who's in a very powerful position and should be encouraged to talk more, as his more garrulous predecessor Alan Thompson did. They're a perfectly competent bunch, and you should firmly squish any blame being attached to them for things that go wrong. That will be invariably the fault of your ministers; and I now come to them.

The first principle you must grasp is that because Keith doesn't find ministerial relationships terribly easy, he tends to steer far too much on to his own deck. Not that there's anything wrong with Rhodes or Bill Sheelton; they're straight, medium-sized, up and down the wicket representatives of the extraordinary party which they have chosen to represent in Parliament, and you really should try to persuade Keith to develop just a little more responsibility to them. It would allow him to do rather more homework over the complicated small print of further and higher education and prevent the extraordinary gaffes which took place in the midst of the Naithe delegation when he burst out: "Come on now, who's further and who's higher?" He ought to know perfectly well that they're all both, and that the clear line he thinks he understands from his modest experience at All Souls simply doesn't exist in the public sector. Which reminds me of the Hon William. Of course, Keith's relationship problems don't apply to him - indeed he was wrong out of a reluctant

Prime Minister, so that Sir K. could have someone congenial to talk to. Moreover William enjoys genuine delegated powers - particularly on public sector higher education. It all goes to show that ministers should be allowed to pick their juniors and not have them thrust upon them.

Indeed if Keith had just a little more regard for his juniors, he would do something about getting a proper minister of state. (I disregard Paul Channon, since he's now so far at cultural arm's length, that he doesn't really count as one of the department; I know you're technically his accounting officer, but woe betide you if you try to interfere; the Select Committee would have you on toast for breakfast.) It does say something about the Prime Minister's regard for education, that the DES is the only department in Whitehall, apart from Transport, to be denied a second-in-command minister of state. Do try to do something about it in those Wednesday morning permanent secretaries' cabals you'll now be attending.

But let me get to your fundamental problem. It's this. Keith, who reckons he's the first deregulating, monetarist, pure-market-forces politician to have entered the cabinet in the past century, is suddenly going beserk on regulation and centralism. It's weird. He's letting in David Young to regiment the youngsters in the schools (apart from those who are clearly destined for All Souls) like some manic major-general; he's interfering in the curriculum like no minister has ever before him in instructing GCE physics teachers that they can examine their charges about how to cause nuclear explosions but never about how to stop them. He's about to introduce a ludicrous list of academic credentials supposedly appropriate to the ages and specialisms of teachers which will turn out to be quite meaningless because the market is glutted anyway; and every time his more anti-statistic colleagues raise the issue of vouchers (in which he surely must believe) he squashes the idea by saying it is very expensive. In other words: he's a fatally muddled笨蛋, quite unable to reconcile his philosophy and his actions. Do try to help him.

Then there's Sheila Browne and her successor. (Quite your most crucial appointment.) She's following an honest, Rab Butler, DES tradition, in moving effortlessly into the Cambridge stratosphere. You must remember that the Rayner report, quite against the PM's initial instincts, confirmed that (traditional) inspectorial independence, which has been so useful in standing up to the wider lunacies of Tory education economics, she's stuck to her guns against Carile and Keith (and even more Sir James) and come out with a little help from the Select Committee, with an honest, coherent, annual, state of the educational nation report, which is the best instrument the people of Britain have ever had to check on the quality of their children and teenagers. It's a worthwhile development and will only continue, if you appoint a successor with the spirit and guts to be quite as independent of Sheila. Have a go at that one too.

I look forward to seeing you at the Select Committee soon. General Elections permitting.
Yours sincerely,
Chris Price
CHRISTOPHER PRICE

When the fall term begins at Gallaudet College in Washington D.C., a new president, W. Lloyd Johns will be at the helm. He will replace Dr Edward C. Merrill who for the past 13 years has been president of the one college in America that teaches only deaf students. Gallaudet's history, the way it works, and what it seeks to do have relevance for America's dream of universal education.

In 1816 Thomas Hopkins Gallaudet became interested in teaching the deaf and went to England for help. There the Braidwood family owned the single school for deaf children. The system used was principally an oral one, based on lip reading. Gallaudet next visited the Saint Jacques School in Paris where the French taught him their method of single-handed sign language. When Gallaudet returned to the United States, he began the Hartford School for the Deaf.

In 1856 Amos Kendall in Washington persuaded Gallaudet's son, John Miner Gallaudet, to come to run his Kendall School for the Deaf. Eight years later the Congress was persuaded to grant the school a charter to award degrees, and thus created the first college exclusively for the deaf.

At the time of its founding, there was considerable discussion about the possibility and indeed the propriety of a college for deaf students. In the popular mind "deaf and dumb" went together and meant an incapacity to learn. Many also felt that if the deaf were brought together in a college setting, they would inter-marry and produce more deaf children for the nation to take care of. Thomas Miner Gallaudet was able to overcome both prejudices, and his school remained and grew.

Gallaudet College expanded the Kendall School and in 1966 established the Model Secondary School for the Deaf. Both schools are supported by Congressional grants, not only for the education which they give, but also in order to develop programme and materials and disseminate them nationally.

A principal requirement for entry into Gallaudet College is hearing so severely impaired that a student cannot hear a sound at 70 decibels. Conversation rises to 55 decibels. Helen Keller remarked that blindness was a barrier between people and things but that deafness was a

No handicap to American pipe dreams



Timothy Healy

barrier between people and people. This barrier hinders deaf children in all their learning. They lose the conversation of parents and other children. When they come to college they cannot cope with the student grapevine, the telephone and the net of chatter that hold together any college. Students who have pre-lingual deafness and have never learned to speak at all have an extraordinarily small vocabulary, sometimes that of a child of eight.

Gallaudet has decided it is better to bring deaf students together than force them into the mainstream. It is only in a sheltered setting that deaf young men and women can participate fully in the life of a college and not be, as they too often are, in "hearing" colleges, mere spectators. Gallaudet has a rich and full student life, including most inter-collegiate sports. Its pub is brightly lit, since the dim light of bars precludes talking by hands. Alarm clocks and fire alarms are lights not sounds. At any general meeting or meal in the college, the air is filled with the marvellous hieroglyphics which the deaf themselves call "windmilling", hands moving swiftly and subtly like

a host of white butterflies. Approximately 1,000 students apply to Gallaudet each year and some 300 are accepted. The programme mandates a preliminary year, so the bachelor's degree takes five years instead of four. Thirteen years ago the most popular major was mathematics, but now, as in many other colleges, it is business administration. Four fifths of the college alumni enter professional occupations, about half of them in education. Most graduates tend to be employed in jobs that are related to the deaf or to deafness. Gallaudet College furnishes a disproportionate number of leaders in the deaf community and a Gallaudet "accent" in signed speech is considered posh.

As in most colleges there is an official speech and an unofficial one. The faculty must all learn "signed English", and the college uses both single-handed signing and lip-reading as the formal speech of instruction and official business. Students among themselves rely on American sign language.

Despite the enormous problems it faces, Gallaudet College, built on the premise that all can learn, even those who have to approach learning through disability, is a reproach to the national mood in which America finds itself. Hard cases make bad law, and hard times lead to bad decisions. We face a mounting government and press disaffection with higher education. Most Americans still dream of sending their kids to college, but in state after state, as well as in the Federal government, legislatures and executives are happily cutting funds for colleges. A steady barrage from the press reminds us that college isn't for everyone, even though all reporters have somehow managed it.

Nations are not economic beings but spiritual ones. They are made up of hopes and dreams, and endless effort and moderate success. To place a just value on any people, we have to know their dreams. In its brick and mortar, its 1,500 students, and its proud century, Gallaudet is a statement of one of these dreams. Its commitment to the education of the deeply handicapped defies a-American's belief in its own young, in its own future. It says to all of us that we believe in each other, that we indulge a solid national bump for learning, and that no handicap is a bar to the spirit of man.

Return to office to find that this week's edition of the paper has appeared. Have now got used to several people editing what I write.

Don's diary

Sunday

Up at 10am to go househunting in Farnham, an hour's drive away. Don't really want to move from Southampton, but the opportunity to begin a career in computer journalism in my mid-30s means working in Sutton - on the wrong railway line for commuting.

Arrive Farnham 11.30am. One house needs a lot doing to it - just the thought of enduring another house conversion is too exhausting. The other really is too expensive.

Monday

Up at 6.30am to drive up to Sutton for 9.30am. Busiest day of the week on the newspaper, when final news pages are set up. Cover several stories for set deadlines during the day. Pasteur drizzle then with academic writing, but the same principle of "publish or perish" pervades.

Phone Europe, then the United States; to check out some points and follow up various leads. Still feel guilty about dithering abroad directly without justifying it to switchboard.

Tuesday

Some things don't change. Scramble for the office Guardian. Turn to the education section to see what's going on - still no permanent archy jobs that I could apply for since my contract ran out. Feel relieved and a bit regretful for this week.

Wednesday

Another reporter announces that he is leaving to take up an editorship on a different paper. That will be the third vacancy in a many months. Reminds me of archaeology in the late 1960s.

Cover the launch of a major new product that will affect the general public in two years' time: much champagne, an electronic gift and a huge wad of technical information to be assimilated and condensed to 600 words by 5.30.

Arrive back at Southampton 8pm. Pick up a letter asking me to give a paper at an archaeological conference - impossible at present, have to turn it down. Asked to referee a grant application - at least I've got time to do that.

Find that the electronic gift doesn't work.

Thursday

Up early to attend a breakfast press conference at a London hotel. The organizers of a computer fair to take place in Germany this spring have flown in to buy up support for the fair. Am pleased to be able to write about export opportunities for British computer companies.

Friday

Open *The THES* gingerly, turn straight to the back for the jobs - same feeling of relief as on Tuesday. Pop up to London for a press conference - I find that I am the only journalist there. Feel very embarrassed for the organizers who haven't done their homework.

Long drive back to Southampton. Tiring, but less exhausting than the last ditch scramble for non-existent funds to continue in academic life; that now seems an age ago.

Back home, proofs of an article that I wrote over a year ago are waiting for me. I actually find it very interesting.

Saturday

Meet a postgraduate student at 10am at the University to discuss her research and to confirm some of her identifications of Roman pottery. Notice that water is still dripping from the ceiling onto the light cable - it really only six months ago.

A couple come to view our house at 3pm. They seem favourable, but will ring back 8pm. Call to say that they found our conversations too complete and felt that they couldn't put their stamp on the house.

John Riley

Until recently the author held a Science and Engineering Research Council research fellowship in Mediterranean archaeology at the University of Southampton.

Priestley and the Test Act

Sir, - Jennifer Tann's cogent article on Joseph Priestley (*THES*, March 25) prompts one observation of detail. In the context of Priestley's work at Warrington the author states that dissenting academies provided "alternatives to the university education denied dissenters by the Test Act of 1673".

This is incorrect. The Test Act of 1673 had nothing to do with the English (or, for that matter, the Scottish) universities. Its purpose was to impose a sacramental test, a requirement, that is, to take the holy communion according to the rites of the Church of England, as a condition for accepting any office of profit under the crown.

The system whereby dissenters were effectively excluded from Oxford and Cambridge universities was quite different. It took the form, not of a sacramental test, but of a requirement to subscribe to the 39 articles of the Church of England - on matriculation at Oxford, on graduation at Cambridge. This requirement was imposed by the statutes of the universities themselves, not by the Test Act of 1673.

This is one of the most frequent misconceptions about that measure. The other is that it excluded Protestant dissenters from membership of the House of Commons.

Yours faithfully,
G. M. DITCHFIELD,
Lecturer in History,
University of Kent.

Sir, - In Jennifer Tann's reassessment of Joseph Priestley (*THES*, March 25) some typographical errors in created a new West Riding town. The school Priestley went to (as indeed did my father) was Batley Grammar School. And I am pleased to say, having walked past it many times, the house at Fieldhead in which Priestley was born carries a plaque recording that event, although how long it has been there I cannot say.
Yours sincerely,
F. J. E. HURST,
The Librarian,
The New University of Ulster.

Higher Education Foundation

Sir, - Your article about the Higher Education Foundation (April 1) rightly highlights the foundation's wish to influence thinking about the values underlying the practices and prospects of higher education. But it underestimates the work achieved since 1979 by the foundation in conferences leading to publications.

These include the following topics, all relating to higher education: study service; validation; the hidden curriculum in business studies degrees; coping (so, humanely) with contraction; access of ethnic minorities; economics of scale; and (the subject of the recent HEG conference) reductionism in academic disciplines. I shall be happy to supply details of this work to interested inquiries.

These topics were chosen as live issues which also have philosophical applications. You, in writing on such matters, have supplied the word which encapsulates the general work of the foundation: and the specific topics it has so far chosen, viz. the reconceptualization of higher education. We should welcome the support of you and your readers in this work.

Yours etc,
JOHN DANCY,
Chairman of the Trustees,
Higher Education Foundation.

University management

Sir, - I am glad to see that at last someone so prominent in university circles as Geoffrey Lockwood considers the availability of training for professional university administrators. It has, he says, been the subject of this "to a criminal degree" for "main institutional officials" (*THES*, April 1). But this is not an issue that extends to even occasional training facilities for many of the university's administrative staffs, but lower in the hierarchy.

I have discovered that some years ago one Scottish university held seminars intended to contribute towards better management and administration inside departments. As far as I know, not a single other British university has done anything like this. If I am wrong, I shall be pleased to be corrected and sent details of any such unusual enterprise elsewhere.

Yours sincerely,
R. PETER WASSILL,
4 Priestfield Road,
Edinburgh.

LETTERS TO THE EDITOR

Funding in the public sector

The reaction of the NAB to this is to say that the unit of resource must decline further in the public sector. There must be lower funding (decreased by the Department of Education and Science and the Treasury), but more students. The alternative, maintaining the unit of resource but lowering the intake to 61-70 per cent of its level last year is "unacceptable".

This last word, taken from an NAB paper which purports to be analytical, presumably translates as "politically unacceptable in a General Election year". Mr Allan and Mrs Richardson argue that no one has been successful in spurring the middle classes to rally around the universities and polytechnics. So far that is true, the intake has not been cut. But if it were cut as drastically as maintaining the unit of resource might require, nice middle-class parents might vote SDP in marginal Tory seats.

There has to be some limit to the reduction in the unit of resource. I should be the last to argue for the ossification of past practice, or against new developments such as credit transfer and accumulation, broken study, mixed-mode study, or two-year initial higher education plus entitlement to continuing education. We are however talking of numbers of FTE students.

If the screw can be turned ever remotely downwards, what do we

do? They really believe that it is possible to reduce the funding indefinitely without any ill effect? Do they imagine that there will not come a point where it will be impossible for the polytechnics to compete with university standards if the latter continue to take a larger share of the funding per student? Why did the universities mount a lobby of Parliament to argue for increased university funding if there would be no adverse effects from such cuts?

Yours faithfully,
D. J. VAIZEY,
Newcastle upon Tyne Polytechnic Association of Polytechnic Teachers.

low status of the teaching function is tolerated in our educational institutions? Is it that there is a lack of assessment criteria, which the teacher unions are in any case reluctant to derive and implement; that teachers generally are apathetic to innovation and involvement in curriculum reform; or is it that the system of feedback, scholarship and willingness to keep up to date through in-service training and educational research.

These criteria emphasize that the teaching function requires one's full commitment and energy and is not something which can be played off against administration and/or research. Continuing in-service training is the life-blood of a dynamic teaching profession.

Reference is often made to the art of teaching. However, the work of psychologists such as Ausubel, Bruner, Kelly, Piaget, Rogers, and Skinner has shown that a serious study of the psychology of learning has a lot to offer the practicing teacher, and that such knowledge is indeed an essential ingredient of "good teaching". Should we be talking about the science of teaching? In conclusion, why is it that such a

May I be bold enough to reiterate the following assessment criteria (no precedence implied): peer evaluation; student evaluation; quality of prepared teaching materials and use of technological aids; willingness to innovate and involvement in curriculum reform; sensitivity to student feedback; scholarship and willingness to keep up to date through in-service training and educational research.

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Yours etc,
GERRY FOWLER,
Director, North-East London Polytechnic.

The letter of Mr Allan and Mrs Richardson (*THES*, March 18) arguing that a reduction in resources of polytechnics would not affect standards must have been music to the ears of those who are set on redistributing the funds allocated to higher education in favour of the universities.

Do they really believe that it is possible to reduce the funding indefinitely without any ill effect? Do they imagine that there will not come a point where it will be impossible for the polytechnics to compete with university standards if the latter continue to take a larger share of the funding per student? Why did the universities mount a lobby of Parliament to argue for increased university funding if there would be no adverse effects from such cuts?

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May I be bold enough to reiterate the following assessment criteria (no precedence implied): peer evaluation; student evaluation; quality of prepared teaching materials and use of technological aids; willingness to innovate and involvement in curriculum reform; sensitivity to student feedback; scholarship and willingness to keep up to date through in-service training and educational research.

These criteria emphasize that the teaching function requires one's full commitment and energy and is not something which can be played off against administration and/or research. Continuing in-service training is the life-blood of a dynamic teaching profession.

Reference is often made to the art of teaching. However, the work of psychologists such as Ausubel, Bruner, Kelly, Piaget, Rogers, and Skinner has shown that a serious study of the psychology of learning has a lot to offer the practicing teacher, and that such knowledge is indeed an essential ingredient of "good teaching". Should we be talking about the science of teaching? In conclusion, why is it that such a

Union View

Not magic to juggle with jobs

There was an element of the conjurer's art about the University Grants Committee's announcement this week of the "new blood" posts. "You thought we'd taken 4,000, but look in three years we'll restore 700." The academic version of "new lamps for old" Scheherazade's magician at least obtained Aladdin's most valuable asset by a straight swap, and only he knew the true worth of the old lamp.

Universities, many of them still reeling under the staff losses of the last 18 months, could be forgiven for being cynical about the exchange now being offered by the Government. The "new blood" posts are few, belated, and seem to follow the erratic and patchy pattern of distribution adopted by the UGC in its selective cuts exercise.

Nevertheless, if they indicate a recognition that universities can sustain no further cuts, they are welcome. If the UGC were prepared to devote more time and care, with proper consultation, the distribution over the next two years could be made more equitable. But they are only limited compensation. They may be a basis for future development. The Government has also a responsibility to those working in the system now. They have met the Government's challenge. They have coped with the pain and anguish over the last two years. They have kept the system going despite the pressures.

Many institutions have had the stuffing knocked out of them. Some are only beginning to recognize the

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full impact. William Waldegrave publicly acknowledged the considerable strain placed on staff, because of the reduction in resources. Our members need to know that Government values the contribution they have made, and will deal even-handedly with them.

AUT members recognize that universities would have to take their share of the Government's reduction in public expenditure. What they can't accept is that they should be the only group exposed to the full impact of rigidly-applied cash limits. Not only have they faced drastic cuts in staff since 1981, hand in hand with this, there has been a continued decline in salaries.

We are in the middle of the 1983 pay round. Other groups have accepted, or are soon likely to agree, increases well outside the cash limit set for the public sector. It would be vindictive, indeed. If the university sector was the only group denied the same freedom to negotiate a fair settlement.

The drive for economy has produced real anomalies which academic and related staff have a legitimate claim to see put right. The Committee of Vice-Chancellors and Principals has recognized the management problems they face because their staff have been less fairly and equitably dealt with than other parts of the education and public sectors. Together we have written to the Department of Education and Science, setting out in stark terms the extent of the damage done over the last few years. The department has the straight political choice of arresting or hastening the decline.

Universities, like the rest of the educational world, are struggling to maintain standards, to protect the quality of teaching and of research. When the upturn in the economy comes they will be expected to play a significant part in providing the skills and expertise that will be vital. They are entitled to expect that their contribution will be recognized.

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